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A group of experts met at the Stanford Medical Center in 1960 to assist the California Society for Crippled Children and Adults in establishing guidelines for the development of services for aphasic children. Subjects discussed were (1) language development in the normal child, (2) neurological bases of linguistic functions, (3) semantic aspects of childhood aphasia, (4) causes of childhood aphasia, (5) relationship to handedness, (6) relationship to adult aphasia, (7) rationale of therapy, (8) relationship with parents, and (9) research needs. Each chapter presents excerpts of comments made by the speakers at the workshops. A list of conference participants is included. (HK)

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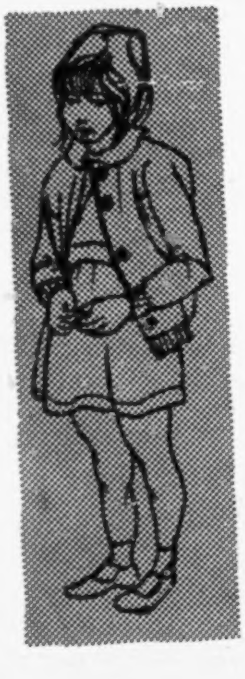
CALIFORNIA ASSOCIATION FOR
NEUROLOGICALLY HANDICAPPED
CHILDREN
Orange County Chapter
P. O. Box 1592
Santa Ana, California 92702

Childhood Aphasia



Proceedings of the Institute on Childhood Aphasia

Sponsored by the California Society for Crippled Children and Adults (the Easter Seal Society), the Easter Seal Research Foundation and Stanford University School of Medicine. September 1960 at Stanford.

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228 McAllister Street, San Francisco, Calif.

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Production-Format by Henry Horowitz

Institute on Childhood Aphasia

Roster of Participants

HARRY BAKWIN, M.D.
Professor, Clinical Pediatrics
New York University Medical School
New York City, N.Y.

LAURETTA BENDER, M.D.
Director of Research (Child Psychiatry)
Children's Unit, Creedmoor State Hospital
Queens Village, N.Y.

HERBERT G. BIRCH, M.D., PH.D.
Consultant
Association for the Aid of Crippled Children
New York City, N.Y.

LEO F. CAIN, PH.D.
Vice President
San Francisco State College
San Francisco, Calif.

JAMES A. CARRELL, PH.D.
Director, Speech and Hearing Clinic
University of Washington
Seattle, Wash.

KATRINA DE HIRSCH, L.C.S.T.
Pediatric Language Disorder Clinic
Columbia-Presbyterian Medical Center
New York City, N.Y.

ANATOLE S. DEKABAN, M.D., PH.D.
Section on Developmental Neurology
National Institute of Neurological Diseases and Blindness
National Institutes of Health
Bethesda, Md.

EDGAR A. DOLL, PH.D.
Consulting Psychologist
Bellingham Public Schools
Bellingham, Wash.

JON EISENSON, PH.D.
Director, Speech and Hearing Clinic
Queens College
Flushing, N.Y.

RAY GRAHAM, LL.D.*
Director of Special Education
State Department of Education
Springfield, Ill.

ELSE HAEUSSERMANN
Educational Consultant, Supervisor of Rehabilitation
Division of Pediatric Psychiatry
Jewish Hospital
Brooklyn, N.Y.

WILLIAM G. HARDY, PH.D.
Director, Hearing and Speech Center;
Associate Professor of Otolaryngology and Environmental Medicine
The John Hopkins Medical Institutions
Baltimore, Md.

MRS. HELEN HERRICK, M.S.W.
Assistant Professor, Department of Special Education and Rehabilitation Counseling
San Francisco State College
San Francisco, Calif.

MARY W. HUBER, PH.D.
Professor of Speech
Los Angeles State College
Los Angeles, Calif.

ROMAN JAKOBSON, PH.D.
S. H. Cross Professor of Slavic Languages, Literatures and General Linguistics
Harvard University
Institute Professor
Massachusetts Institute of Technology
Cambridge, Mass.

ISAAC W. KARLIN, M.D.
Attending Pediatrician, Director of Speech Clinic
Jewish Hospital
Principal Investigator, Aphasia Research Project NIH-OVR
Jewish Chronic Disease Hospital
Brooklyn, N.Y.

EDGAR LOWELL, PH.D.
Administrator
John Tracy Clinic
Los Angeles, Calif.

RICHARD L. MASLAND, M.D.
Director
National Institute of Neurological Diseases and Blindness
National Institutes of Health
Bethesda, Md.

(Continued)

---

*Deceased

MILDRED A. McGINNIS, M.A.
Director Emeritus, Division of Speech Pathology
Central Institute for the Deaf
St. Louis, Mo.

KARL H. PRIBRAM, M.D.
Associate Professor, Departments of Psychiatry and Psychology
Stanford University School of Medicine
Palo Alto, Calif.

LAMAR ROBERTS, M.D.
Professor of Surgery-Neurosurgery
University of Florida
Gainesville, Fla.

CHESTER A. SWINYARD, M.D., PH.D.
Director, Children's Division
Institute of Physical Medicine and Rehabilitation
New York City, N.Y.

MIRIAN TANNHAUSER, M.A.
Administrative Supervisor of Special Education
Montgomery County Board of Education
Rockville, Md.

MILDRED C. TEMPLIN, PH.D.
Professor, Institute of Child Development
University of Minnesota
Minneapolis, Minn.

JOSEPH M. WEPMAN, PH.D.
Professor of Surgery and Psychology
University of Chicago
Chicago, Ill.

ROBERT WEST, PH.D.
Professor of Speech; Director of Speech and Hearing Clinic
Brooklyn College
Brooklyn, N.Y.

NANCY E. WOOD, PH.D.
Specialist on Speech and Hearing Disorders
United States Office of Education
Washington, D.C.

JOSEPH WORTIS, M.D.
Associate Clinical Professor of Psychiatry
State University of New York
New York City, N.Y.

Professional Advisory Committee

CALIFORNIA SOCIETY FOR CRIPPLED CHILDREN AND ADULTS

VIRGIL A. ANDERSON, PH.D., *Director, Division of Speech Pathology and Audiology,* Stanford University School of Medicine, Stanford
CRAWFORD BOST, M.D., *Chairman; Clinical Professor of Pediatrics,* University of California School of Medicine, San Francisco
PETER COHEN, M.D., *Associate Professor of Pediatrics,* University of California School of Medicine, San Francisco
ALAN FOORD, M.D., *Clinical Professor of Maternal and Child Health,* School of Public Health, University of California, Berkeley; *Director of Pupil and Personnel Health and Welfare,* Berkeley Public School System
LUCIE LAWSON, PH.D., *Speech Therapist,* Franklin Hospital; *Lecturer in Speech Therapy and Oral Facial Prosthesis,* University of California School of Dentistry, San Francisco
ANTHONY MOORE, D.D.S., Orthodontist, Riverside; *Board of Directors,* California Society for Crippled Children and Adults
EDWARD H. SENZ, M.D., *Chief, Neurological Clinic,* Children's Hospital of the East Bay, Oakland
WILLIAM J. WEDELL,* M.D., *Chief of Medical Services,* School for Cerebral Palsied Children, Northern California; *Ass't Clinical Professor of Neurology,* University of California School of Medicine, San Francisco
MABEL BRENN WHITEHEAD, PH.D., *Professor of Special Education,* San Francisco State College, San Francisco
ERNST WOLFF, M.D., *Pediatrician,* San Francisco

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*Deceased

PROGRAM

September 19-20-21, 1960

WELCOMING REMARKS AND INTRODUCTION

ROBERT H. ALWAY, M.D.
Dean, Stanford University School of Medicine

VIRGIL A. ANDERSON, PH.D.
Director, Speech and Hearing Clinic, Stanford University
Member, Professional Advisory Committee
California Society for Crippled Children and Adults

INTRODUCTION OF PROBLEM BY GENERAL CHAIRMAN

ROBERT WEST, PH.D.

I *Neuroanatomical and Neurophysiological Backgrounds of Language*

Chairman: Robert West, Ph.D.

Speaker: Chester A. Swinyard, M.D., Ph.D.

Discussants: Richard L. Masland, M.D.
Lamar Roberts, M.D.
Karl Pribram, M.D.

II *Language Development—Factors Contributing to or Deterring Language Development*

Chairman: James A. Carrell, Ph.D.

Speaker: Mildred C. Templin, Ph.D.

Discussants: Nancy E. Wood, Ph.D.
Else Haeussermann
Roman Jakobson, Ph.D.

PROGRAM

(Continued)

III *Causes and Diagnoses of Childhood Aphasia with Emphasis upon Medical Aspects*

Chairman: Harry Bakwin, M.D.

Speaker: Isaac W. Karlin, M.D.

Discussants: Anatole S. Dekaban, M.D., Ph.D.
Mary Huber, Ph.D.

IV *Causes and Diagnoses of Childhood Aphasia with Emphasis upon Psychiatric, Psychological, Speech and Audiological Aspects*

Chairman: Jon Eisenson, Ph.D.

Speaker: William G. Hardy, Ph.D.

Discussants: Lauretta Bender, M.D.
Katrina De Hirsch, L.C.S.T.
Edgar A. Doll, Ph.D.

V *Educational Management of Children with Developmental Language Disorders*

Chairman: Joseph M. Wepman, Ph.D.

Speaker: Edgar A. Doll, Ph.D.

Discussants: Mildred A. McGinnis, M.A.
Mirian Tannhauser, M.A.
Leo F. Cain, Ph.D.

VI *Problems of Management and Treatment with Emphasis upon Parent, Child and Community Relationships*

Chairman: Ray Graham, LL.D.

Speaker: Helen Herrick, M.S.W.

Discussants: Joseph Wortis, M.D.
Edgar L. Lowell, Ph.D.
Herbert G. Birch, M.D., Ph.D.

VII *Summary by General Chairman*

Robert West, Ph.D.

Foreword

IN MID-1958 a group of California parents of aphasic children accepted an invitation to serve as a special sub-committee on aphasia for the Parents Advisory Committee of the California Society for Crippled Children and Adults. The dedicated pioneering efforts of this original parent organization stimulated the program from which the present volume results.

Then, as now, a major concern of parents and Society alike was the establishing of guidelines for the development of services for aphasic children — through creating opportunity for the study and discussion of their diagnosis, treatment and education.

To secure the professional guidance and advice sought by those working with the problems of aphasia, the Society called upon its own Professional Advisory Committee, which includes specialists from a broad range of rehabilitative and medical services.

Aware of the wide divergence of practice in diagnosis and treatment of childhood aphasia, the Professional Advisory Committee recommended an exploration of professional opinion and practice on the broadest possible basis. To this end, it proposed a nationwide interdisciplinary Institute on Childhood Aphasia, at which every aspect of the existing body of knowledge of aphasia might be examined and charted, and from which the long-sought guidelines might be drawn.

With the enlistment of Stanford University School of Medicine and the Easter Seal Research Foundation as co-sponsors, the California Society for Crippled Children and Adults began the work which culminated in the gathering whose proceedings are recorded in these pages.

The Easter Seal Research Foundation made available a grant of $10,000 to finance the project. This fund was supplemented by a $1,500 grant by the Association for the Aid of Crippled Children and by the

National Institute of Neurological Diseases and Blindness, which made possible the participation of four of the invited consultants. A subsequent grant from the Easter Seal Research Foundation made possible the publication of these proceedings.

The Institute convened at Stanford Medical Center on September 19-20-21, 1960 in six sessions, each with its own chairman, keynote speaker and discussion panel. Twenty-eight specialists, representing as many institutions and agencies, participated. All administrative aspects of the Institute were assumed by the California Society.

The joint committee which undertook to plan and organize the Institute was composed of Lucie Lawson, Ph.D., chairman; W. J. Wedell, M.D., Ernst Wolff, M.D., and Peter Cohen, M.D., for the California Society; Virgil Anderson, Ph.D., Luigi Luzzatti, M.D., and Hayes Newby, Ph.D., for Stanford University. Consultative assistance was given by Jayne Shover, associate director of the National Society for Crippled Children and Adults. The arduous task of coordinating every phase of preparation was in the capable hands of Runo Arne, Consultant on the staff of the California Society.

To Dean Robert H. Alway of the Stanford University School of Medicine, for his cooperation in securing for the Institute the co-sponsorship of Stanford University and the use of its facilities and resources; to Dr. William Gellman, whose understanding support as director of the Easter Seal Research Foundation resulted in the grant under which the Institute was conducted; and to Dr. Crawford Bost and all of those other members of the California Society's Professional Advisory Committee who worked so untiringly in the organizational and administrative preparations for the Institute, the California Society for Crippled Children and Adults extends its sincere gratitude.

ESTHER ELDER SMITH
Executive Director

Preface

THE STENOGRAPHIC REPORT of the Institute on Childhood Aphasia, when transcribed, consisted of 229 pages of double-spaced typescript. This material has been reduced by almost one half. This reduction was accomplished on the principle of setting up certain practical and timely issues regarding the overall subject of the workshop and then seeking out in the remarks of the conferees those comments which dealt specifically with these issues. Those comments that touched upon the selected issues only obliquely were omitted, no matter how valuable they were intrinsically. Some comments, also, were omitted that required additional visual materials for their communication.

The issues thus selected became the subjects of the various chapters of the report that follows. In each chapter the comments appear in the time order in which they were made by the speakers. The statements were not, however, all made in direct sequence nor necessarily made in the same sessions of the Institute. For example, on the subject of the name to be used to describe the syndrome discussed under the proposed title of "childhood aphasia," practically every speaker felt it his duty to comment, regardless of the assignment he had been given on the original program. Some reverted to this semantic aspect of the subject more than once. The reader will note in each chapter, therefore, the growth of ideas through the interchange of opinions among the participants.

In the original call this workshop was designated as "The Conference on Childhood Aphasia." These pages report many of the statements by members of the conference as to what each thought we were really talking about. To some it was *infantile aphasia,* to some *congenital aphasia,* and to others *developmental aphasia.* Various other names were also used. The editorial comments in this document use the original title, *childhood aphasia* with no intention of prejudicing the issue, but only to preserve some consistency of terminology.

A word should be said about the dynamics of this conference. It was different from most such professional gatherings, where the participants speak mostly for the edification of an invited audience. The speakers at such a convention come in time for their appointed meetings and often leave when they have played their parts. In this conference, however, there were no auditors except the sponsoring committee and the participants themselves. The conferees were all present at all sessions. They had prepared speeches on assigned aspects of childhood aphasia. But many of the most telling remarks were extemporaneous comments quite aside from the prepared speeches. It has been difficult to organize these extemporaneous remarks to bring together all the comments on a given topic and at the same time preserve the contexts in which these remarks were made. Often remarks on one topic were interjected into the discussion of another.

The editing, therefore, represents a compromise between a report organized by topics and a running account of how a group of experts on the general subject of childhood aphasia got together in a workshop and developed a body of ideas by the process of presentation and criticism, without being hampered by the need to make adjustments to an audience or to adhere to a prearranged program.

R. W.

PUBLISHER'S NOTE

Subsequent to Dr. West's completion of the basic task of editing and organizing these proceedings for publication, certain additional minor editorial revisions were dictated by limitations of the publication grant, production schedules and format. For all such editing, the Publisher assumes full responsibility.

C.S.C.C.A.

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What We Must Learn About Childhood Aphasia

An Introduction by Robert West, Ph.D.,
General Chairman

This is a time for making delineations and definitions. I think it is very likely that this meeting will go down in history as a very important one. We probably could not, under any other setting, gather together as many competent experts as we now have here.

The California Society for Crippled Children and Adults has asked us certain rather specific questions, and we have divided the answers to those questions into programs properly arranged to take up the various aspects of the problem discussed.

The Professional Advisory Committee of the California Society has developed the following statement of a tentative definition to describe the area of intended discussion:

> "Impairment in language function (expressive and receptive) resulting from maldevelopment or injury to the central nervous system, pre-natally, para-natally, or post-natally."
>
> (Of course, we need to talk about *post-natally* in terms of the immediate babyhood and not later, at least, than the normal time for the development of speech. Let's say we would agree that *post-natally* means any time within the first year of life.)
>
> "The language deficiency may or may not be associated with other cerebral or neurological pathology or dysfunction.
>
> "Excluded are language problems associated primarily with:
>
> "(1) mental deficiency, (2) hearing impairment, (3) central nervous system damage affecting the peripheral speech mechanism, (4) emotional disturbance, (5) delayed maturation in language development resulting from social and emotional factors or physical factors not primarily due to central nervous system involvement."

Perhaps we ought to define "emotional disturbance" in terms of not only the real things that disturb the child and make him unhappy or make him frustrated or make him angry or make him timid or make him afraid, but also the schizophrenias, which leave him serene and calm but out of this world.

I would say that we have first the problem of deciding whether or not there is a special area, an area like cerebral palsy or mental impairment, that can be thought of and described as different from the others or as significantly isolated from the others, so that you can draw a line around it and say, "This is infantile aphasia, this is congenital aphasia," or call it what you will.

First, we must therefore answer the question: "Is there such an area?" If there is such an area, then money may be raised in the name of that area, just as money is raised in the name of *heart* or *cancer* or something else. If there isn't such an area, then the money should be raised in the name of related things.

The second question is: "How do you describe this thing so that people who are operating agencies for the care of these handicapped children will know which ones belong in the operation area and which ones do not?" That would be the second thing to work out — a definition of what this area is and what it is not.

Thirdly: Perhaps we need a name. Perhaps "congenital aphasia" is not the name, perhaps "aphasia" is not the name. It may be that "aphasia" is used simply because this condition is similar to what might be your condition if you today suffered a lesion of the area of Broca, and were suddenly deprived of speech in one of its forms. Maybe the word "aphasia" is used merely because of the similarity. Maybe some of the other names might be more appropriate. It seems to me that the discrepancy between abilities and disabilities in the aphasic child is one of the things that earmark it and one of the things that must be taken into account in naming it.

These are some of the things that we must constantly bear in mind to make our remarks practical and remember our responsibility to the agencies that sponsor this meeting. They want something practical and usable in meeting the requests from parents, hundreds of parents. They need to answer those requests; and they want to answer them in a very practical and yet logical way.

Beginnings of Speech in the Normal Child

Miss Haeussermann, Dr. Wepman, Dr. Doll

Considerable discussion was devoted during the Institute to basic considerations of language development in the normal child. Miss Haeussermann began the discussion with a directly behavioristic explanation. Dr. Wepman supplemented this with reports of the results of psycholinguistic research on the stage-by-stage development of language in the normal child. Dr. Doll discussed the role of the unstructured incidental training received during the child's daily life, indicating that a large part of spontaneous language development is the result of this incidental training.

MISS HAEUSSERMANN: There is a book which describes development of the child from zero to two years, by M. M. Lewis, "How Children Learn to Speak." I would like to use a few of the thoughts that Lewis has in this book. He begins by saying that about 120 years ago Charles Darwin made a record of the progress of his new-born son. Lewis describes the insight into the significance of the apparently trivial as a quality of good contributors to knowledge. By this he means that Darwin asked himself "why do babies cry?" He looked for similar manifestations in other creatures and wondered "why do lambs bleat?" Observations showed that the vocal expressions had similarities in origin. The state of emptiness, of hunger, results in an effort to rid the organism of that state of discomfort. The body contorts, the legs kick, and a cry is produced by the vocal organs. If the environment heeds this cry, this is a beginning of language for the child. Language develops in the process of interaction between the growing organism and the human environment in its quality as a world of speakers.

What the child does and vocalizes, what we do and say to him — these are the factors at work throughout the growth of his speech and language development. Day by day out of a multitude of apparently small events his speech grows.

He goes on to describe sound by sound, the discomfort sounds of the child, which are the first ones, because when the child is comfortable the first few days he does not make any sound. After a week the child makes sounds even when he is comfortable. These sounds have a different quality. The discomfort sounds are made with a tense expression; you all know the sound of babies who are crying. After a few days the child makes sounds when he is comfortable after he has been fed and they have a different quality then, more of a comfortable sound. After a few more weeks the child not only makes these sounds but the mother learns to differentiate other sounds. The child also begins to react not only to inanimate sounds, such as the sound of a bell or the bell ringing, but to the human voice. After four weeks of age or shortly after, one voice gains significance, his mother's. After a short time just the voice production of the mother has the result of pacifying the child when the child has been crying, even in the dark room when the child does not see the mother's face. These are the real very first beginnings of speech.

DR. WEPMAN: In the psycholinguistic research being conducted jointly at the Universities of Chicago and North Carolina we have been concentrating largely on the study of retained speech or oral language expression in adult aphasic patients. Only recently have we begun to apply some of the principles developed in these studies of linguistic impairment to a consideration of the acquisition of language in children. From this has come the beginnings of a scale of the processes involved in language development.

While still very much in its embryonic stage I think it merits inclusion here in the light of the present discussion. Most of the scale has been derived from the identification of differential loss patterns in the linguistic processes in adults. It seems to us to be in part very closely related to the descriptions of the linguistic processes presented by Dr. Jakobson as well as to the developmental processes in language described by Dr. Templin.

The scale itself is descriptive of the several stages through which the child must pass as he develops useful language and can be stated discursively somewhat as follows:

Stage 1 — A child starts out in life unable to comprehend speech or to produce speech. He is during this time speechless.

Stage 2 — The child begins to use for his own pleasure the phonemes of the speech of the environment, the sounds made by the people around him. He repeats these sounds over and over, not in any attempt to communicate but solely because there is pleasure to him in the act. Soon these autistic reproductions become merged with a phonemic echoing of the environmental sounds — a conscious or close to conscious repetition produced in the melody used by the speakers around him. This takes on the character of a jargon-like pre-speech. The actual phonemes used are not as yet combined into real words by the child, but are often recognized as meaningful words by the environment and are rewarded as words with meaning. This differential reward causes some of the patterns expressed to be repeated and others not similarly rewarded to become extinct.

Stage 3 — Overlapping the preceding stage of development to some degree but extending far beyond it in the developmental process is the beginning of aural comprehension for speech. The child begins to understand what is said to him, probably at first in terms of the melody and voice inflection used, but soon in terms of these factors and the actual words of the environmental speech as well. He begins to store in his memory bank associations to particular sound combinations, especially those which have meaning to him. He even begins to form words and some of them are just like the speech he hears and some are neologistic combinations probably representing what he thinks he hears. Most notably during this stage his attempts at oral communication are often far from the mark as far as the listener is concerned — he speaks in a language all his own and meaning must be read into what he says or assumed to be present even though not actually identifiable. Here he speaks, but his efforts are for the most part contextually meaningless.

Stage 4 — The child begins to formulate understandable words, almost always substantive naming words to begin with, and highly generalized rather than specific. He goes on to a broader use of the nominal, verbal and even adjectival use of words. He begins with single word expression and adds action and modification with time. He has gained the semantic use of language.

Stage 5 — To his substance the child now adds the last flourishing touch of language — its syntax or grammar. He now has attained all of the language processes and while he continues to develop vocabulary and grammar he is only adding to the stages here described.

Dr. Doll: We notice of course that language develops from auditory perception to vocalized speech, and ultimately to reading and writing. This progress is generally spontaneous but may be assisted by systematic instruction. The unsystematic learning is facilitated by parents, siblings, age peers, and environmental experience. It is a mistake to think that the only way in which language is acquired is through formal instruction at school. On the contrary, the school only takes advantage of the other aspects of learning and promotes, formalizes, and systematizes the higher developmental linguistic stages and their more intricate applications.

The Bases of Linguistic Functions

Dr. Dekaban, Dr. Pribram, Dr. Swinyard,
Dr. Masland, Dr. Roberts, Dr. Karlin, Dr. Templin

Much of the Institute's discussion was neurological. Caution was urged against being too specific about the roles played by the separate "organs" within the cranium, and against the dangers of sweeping generalizations about language as a purely cerebral function. Also discussed were the cybernetics of language, the storing of patterns that control linguistic behavior; the localization of linguistic functions of the cerebral cortex, in which the work of Penfield and Roberts was cited; and fundamentals upon which the language development of the child are based, two psychologic aspects of which were reported in detail.

Dr. Dekaban: Most likely we all will agree that the brain functions as a whole. There is no question that there are areas which subserve a particular predominant function but nonetheless the brain functions as a whole.

I would like to take issue with the fashionable subdivision of the cerebal functions into various levels. This has been a useful speculative approach but not necessarily the best from the physiological viewpoint.

Perhaps we should consider the function of the brain rather in the term of various systems which, as we know, anatomically extend across the boundary of "levels." For example, the conception of the thalamocortical circuits are closer to the facts than the conception of the thalamic and cortical levels.

All that we heard today places omnipotence on the cerebral cortex although the cortex by itself can do nothing. The cortex does not function by itself but in close interaction with other centers which are evolutionally older and which produce the background for the more complex activity of the cortex.

In relation to this conference it might be put on record that Penfield and also others mentioned that stimulation of the posterior part of the thalamus has caused in a few patients modification of speech and arrest of vocalization. I am bringing this to your attention so that our thinking and future research in regard to aphasia should not confine itself with the cortex alone but also explore deeper structures. We must also remember that stimulation of the cerebral cortex by electrical currents is not a physiological method. However, we have to resort to it since we have none better.

Dr. Pribram: Everything that has been said is, of course, very true. On the other hand, it is also very clear that the front part of the brain does something different from the back part. The upper part does something different from the lower part. Furthermore, when we are dealing with units of analysis or techniques of any kind in the laboratory, and Dr. Roberts' experiments, we cannot look at the whole thing all at once.

None of us is sufficiently intelligent to take in all of the data in the world simultaneously and operate on them, so we segment out this and that aspect of the unit. When we do this (knowing that the brain is not a sponge or a completely amorphous piece of tissue but is made of systems) then we can talk about functions of this system and that system. Some of these will be more or less critically involved in the behavior we are talking about, in this case language functions. I don't think we have to go back to notions that all parts of the brain do the same thing, even though they all may have something to do with what we are talking about more or less.

If you take out the heart, the language function is disturbed and none of us is going to talk about the heart as part of the physiological mechanism producing language. This is not what we're talking about; the critical systems are the ones we are after and we must narrow down, when we are speaking at any one moment, to the data we have obtained with a particular technique.

Dr. Swinyard: An essential feature of the relationship between the speaker and the listener is that the listener must convert the message into the same form in which it was organized in the speaker's brain if the communication is to be meaningful. This can only be done if both have a sufficient common experience. Both must have a memory store of common language.

Every language is a system of units, differing in size, which combine in a manner regulated by the structural rules of the system. Thus, in the English language, there are about forty of the smallest units, the *phonemes,* which are combined to form *morphemes,* which have a grammatical function in language. The largest unit in English is the sentence. A knowledge of these units and how they combine must be consciously or unconsciously in the memory of every speaker and listener if the speech is to result in communication.

It is the function of speech to convert language into a transmissible form. The reception of speech is a process of recovering language units from the transmitted signals. The speaker's brain must feed the speech mechanism a flow of language material. It is useful to maintain this concept of duality of speech-and-language to avoid confusion because it is events taking place at the psychological level that constitute the linguistic aspect of speech and make it necessary to separate them.

All of us are aware that speech and language are closely bound with the child's mental development. During the first year or two, the child develops the ability to form the skilled movements of speech and to recognize and interpret the acoustic signals which he receives from other people. He is also developing mental power and moving in terms of conceptual thinking. The rate of development of mental capacity is very much dependent upon the learning of speech. It is well known that congenital deafness interferes with the learning of speech and delays development of normal intellectual capacity.

The role of afferent input in normal speech can be appreciated if we consider the role that auditory and tactile feedback plays in monitoring speech. The speed, distance and nature of tongue movements are determined by the wave motions which return to the speaker's ears. Many of us have personally experienced the importance of the normal feedback control by trying to maintain a steady flow of speech when the auditory feedback is delayed by one-tenth of a second. With the disturbance of this guidance system, many individuals under these circumstances are virtually speechless. Touch and position feedbacks are probably just as important, as evidenced by the speech difficulty encountered when the surface of the tongue is anesthetized.

The importance of sensory input in speech and general intellectual behavior is demonstrated by the recent studies of experimental reduction of sensory input with resultant disordered perception and hallucinations. These general areas of experimentation indicate the important role that sensory input plays, both with respect to the motor and the psychological aspects of speech.

The important role of sensory input on motor mechanism of the brain is not new. About sixty-five years ago Claude Bernard observed that dorsal rhizotomy would produce an enduring flaccid paralysis in the part of the body concerned. Several investigators have confirmed the observation that removing afferent input to the spinal cord from the part concerned will produce an enduring flaccid paralysis. There are reports of paralysis in which later necropsy study of the brain revealed all of the so-called motor systems intact and the only organic lesion was confined to one of the large ascending afferent systems, namely the medial lemniscus.

Writers have frequently diagrammed the speech mechanism of the individual by illustrating the afferent input mechanisms to the brain and giving some detail of the upper and lower motor neurons which leave the brain to the laryngeal and articular and respiratory muscles. The neuronal interconnections between the primary receptor afferent areas and the descending efferent pathways involve widespread interconnections in the brain which are not objectively known but frequently speculated about. I believe we have still some justification to refer to the areas of cortical integration as the little black box.

When we consider the development of the higher functions of speech and thinking, we must mention that the newborn child is essentially a medullary subcortical being in whom the cortex is functioning at a very low level, if at all. The cortex is far from mature, as compared with the subcortical centers. Even the motor activity of the newborn is a transitory type and, as cerebral maturation occurs, the pattern of motor activity changes and a new level of function develops as the cortex matures anatomically and physiologically.

The young infant cannot be studied by the classic methods of neurology or psychology and psychiatry. Just as Andre Thomas has developed original methods of evaluating the child neurologically, so the psychologist, psychiatrist and speech pathologist must constantly re-assess the adequacy of his devised instruments for evaluating the deviations in maturation of speech, behavior and intellectual functioning.

It is essential to make repeated examinations *of the young child* in order to appreciate some of the changes and adjustments that occur because of the plasticity of the growing brain. It would be pointless in a conference devoted to failure of speech development to cite the studies of brain injury and speech deficits in the adult.

The brain of the newborn codes auditory, kinesthetic and visual impressions. A reservoir of recall of kinesthetic, visual and auditory experiences is essential for development of speech as well as an overall capacity of brain functioning which we might call intelligence. It is doubtful that one can develop normally in the absence of the other.

Without depreciating too much man's Mount Olympus we have indicated that, although numerous interconnections are made at a cortical level, subcortical integrating mechanisms such as the centrencephalic center closely integrated with the reticular arousal sytsem may be more of a speech center than certain cortical areas. The brain stem is of primary physiological importance. It is concerned with higher mental processes and is not merely an avenue of access to the cerebral cortex. Lindsley has equated emotion with the reticular arousal system because emotional tone is an integral part of thinking and speech. These subcortical systems must play a role in the development of human speech and intelligence.

Dr. Masland: Dr. Swinyard has gotten us off to a very good start. As intimated in his introduction, the problem of correlating anatomy and structure with function is an extremely difficult one, particularly in the field of childhood aphasia.

The difficulties stem from several sources. The basic problem is that there are few, if any, reported pathological studies of children who had undergone adequate clinical investigation for aphasia.*

We, therefore, have relied very heavily on the results of work with adults; but, as mentioned by Dr. Swinyard, there is a serious question whether information derived from the study of adult aphasia necessarily relates to the childhood problem.

To me the most dramatic evidences of this are the data from hemispherectomy of individuals who experience serious brain injury in early childhood. We now know that the entire left hemisphere, the cortex of the entire left side, can be removed under these circumstances with very little, if any, disturbance of speech.

The implication of this is, of course, that in early childhood there is a great deal of plasticity, a great deal of opportunity for other parts of the brain, presumably the other hemisphere, to carry out the functions ordinarily subserved by the left hemisphere.

Dr. Roberts: The work summarized here has been reported with Dr. Wilder Penfield. These patients were operated upon by Dr. Penfield and associates in the treatment of focal cerebral seizures. Most of these patients had scar tissue resulting from trauma during or after birth, infections, and so on. A few had tumors. With the patient under local anesthesia a large craniotomy was performed. There are two effects of the electric current: the first is a positive one or vocalization, and the second, a negative one or interference with speech. Vocalization is a sustained or interrupted vowel cry such as "Eee." It may have a consonant component. If the stimulating electrode is kept in place, the patient will continue to vocalize until he has to take a breath. He will take a breath and then continue to vocalize in the same manner. Vocalization has occurred during stimulation of either primary or supplementary motor areas of either cerebral hemisphere.

The first of the negative effects is complete arrest of speech. Hesitation, slurring, distortion, and repetition have also occurred. Hesitation, slurring, and repetition are self-explanatory. By distortion is meant a sound which is unrecognizable as a word. These effects, arrest, hesitation, and so on, have occurred when the electric current was applied to the motor areas of either hemisphere and to the dominant, usually left, parietotemporal and Broca's areas.

These effects could have various interpretations. I believe that those which occurred when the electrode was applied to the motor areas could be simply a disturbance in the motor mechanism of speech. Whereas, those occurring outside the motor areas could be an interference with some of the higher processes of language function.

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* Landau, William M.; Goldstein, Robert; and Kleffner, Frank R.: *Congenital Aphasia: a clinicopathologic study*. Neurology *10*:915–921, 1960.

The first test used by Dr. Penfield was that of having the patient count. The electrode was applied to various cortical areas to see if counting might be interfered with. The patient may have said "Six, seven" and the electrode was applied to the cortex when he said seven. He might then jump to seventeen and then, when the electrode was withdrawn, continue with eight. This we have termed "confusion of numbers while counting." It has occurred when the electrode was applied to the left parietotemporal, Broca's and supplementary motor areas.

The next test used was that of having the patient name a series of pictures of objects. He was required to use the phrase "This is a" before naming the object. He may continue to talk but be unable to name. For example, when shown a picture of a foot one patient said "I know what it is, that is something you put in your shoe." When the electrode was withdrawn he named foot immediately. This type of disturbance we have called inability to name with retained ability to speak. Another effect is misnaming with evidence of perseveration. For example, he may have named a "hammer" correctly and then called a picture of a "tree" a "hammer." On some occasions the perseverated word was not the name of a picture but a word which had been used in conversation just before the electrode had been applied.

The last effect which is the most interesting to me is misnaming without perseveration. The patient may use a word somewhat closely related in sound such as "camel" for "comb." Or, he may use a synonym such as "moth" for "butterfly" or "hay" for "bed." Or entirely unrelated words, such as "rink" for "scissors" or "cone" for "hammer," have been used. On a couple of occasions there is evidence of generalized confusion at the same time. Because of the fact that the confusion immediately disappeared when the electrode was withdrawn and there was no evidence of electrographic after discharge, these responses were included.

Excluding the complete arrest of speech we have grouped hesitation, slurring, distortion, and repetition, confusion of numbers while counting, inability to name with retained ability to speak, and misnaming with or without perseveration as dysphasic or aphasic types of responses. All of these responses have occurred when the electrode was applied to the dominant, usually left, parietotemporal, Broca's and supplementary motor areas. The parietotemporal area includes the posterior part of the temporal lobe and the adjacent supramarginal and angular gyri. So far as could be determined there was no difference in the types of responses from these three areas. In other words, from the standpoint of electrical interference these areas seem equipotential. This could mean that interference has been produced in the neuronal system which may include the upper brain stem.

The interference phenomenon is not one which is limited to speech; it occurs when one applies the electric current to the cortex as the patient is attempting to do other things. For example, if he is opposing the thumb to each of the fingers in turn, application of the electrode to the motor cortex may arrest this act. So one of the questions in which we have been most interested is actually: "What does the electric current do?" It seems to do a combination of things, at times drawing positive responses and at other times interfering with what functions that cortex normally subserves.

Dr. Karlin: Isn't it true that sometimes we cannot compare a complete removal of the portion of the brain with the damage to a certain area in the brain — that the damage may produce different types of changes and more serious changes than the complete removal of a certain area in the brain? I wonder if I am correct in stating this.

Dr. Roberts has mentioned that the anterior surface of the temporal lobe was removed and there was no disturbance in the speech. I would like to ask Dr. Roberts whether the important point is that with the removal of the posterior part of the temporal area rather than the anterior we have certain language disturbances, but when the anterior part is removed the disturbances would not be so striking.

I asked Dr. Roberts also his concept of localization versus non-localization. Some of the work done by Penfield and Rasmussen and by Dr. Roberts would indicate that there is localization for language functioning in the brain, that the areas in the brain are not equipotential, but that certain areas have to do with certain functions.

However, there is also the point of view that there is non-localization as far as language is concerned. Is there a final answer to that question?

Dr. Swinyard: I would also like to comment on Dr. Roberts' equipotential representation of the supplemental motor, Broca's area and Wernicke's area. I think he was speaking with reference to the effect of stimulation rather than the transient moderately severe or the severe aspect of language or speech dysfunction when these areas are extirpated. Certainly we have seen the breadth and the depth of this problem that faces the conference.

I am glad I did not teeter too much to displease Dr. Pribram on the question of the relationship of input and output. It is well known that the cerebellum not only has a somatotopic representation, as do certain areas of the cerebral cortex, but also the cerebellar cortex is anatomically related in a point-to-point relationship to the cerebral cortex.

I believe it is generally agreed that there are disturbances of speech with cerebellar lesions, but I do not feel competent to talk about the possibility of cerebellar lesions affecting speech and language. To my knowledge, the cerebellum is primarily related to the dysarthric defects.

Dr. Templin: It has been pointed out that factors both within the individual and in his environment influence his language growth. Although there are many factors within the individual which may influence his language, I will discuss only two: the sex and the intelligence of the child. Factors such as hearing acuity, sound perception, muscular competence, neurological integrity, and others, are probably equally important but will be considered many times in our discussions.

The statement is frequently made that girls are accelerated over boys in language growth. I believe this statement is much oversimplified. The question is an important one because frequently sex is offered as an explanation of language behavior, and often sex differences are accepted and explained within the wider framework of sex-role identification and quality of mother-child relationships.

If we look to the evidence, it is quite probable that the sex differences in language development which appear do not justify as much emphasis as they are often given. Real deviations in language behavior are more frequent in boys than in girls. This sex difference is true of most other deviant behavior. However, when we look at the development of language skills, the observed differences are neither great enough nor consistent enough among all the various language indices to deserve the amount of attention they have received over the years. On the whole, girls do attain accuracy in articulation of English phonemes, achieve a higher level of grammatical structure and begin to talk a little earlier than boys. But boys have been found to have larger vocabularies, a wider range of information, and talk more rapidly than girls of the same age.

None of the differences reported are great. They vary not only with the index of language development but also to some extent with the date at which the study was conducted. As an example of the differences reported, let us look at a number of studies on the length of utterances. Here, while girls are usually referred to as accelerated, the differences reported are often not statistically significant, although they most frequently are in the same direction. McCarthy in her 1954 chapter in the *Manual of Child Psychology* summarized fourteen studies of sentence length and presents some 66 comparisons between boys and girls of the same ages on the variable of length of utterance:

> Girls used longer sentences in 48 instances, boys in 15, and neither sex in 3. For many of the comparisons, differences are small. There was no difference in 3 comparisons, and for the remainder, the dif-

> ference in mean number of words per remark varied between one-tenth and five-tenths words. In 41 per cent of the comparisons the difference in the mean number of words was only two-tenths of a word or less.

This is not sufficient difference, it would seem, to warrant the amount of discussion it has been given, nor to justify the acceptance of the sex of a child as an explanation for accelerated or retarded language growth.

Recent studies tend to report less differences between the performance of boys and girls than earlier ones. In studies from the last decade, the sex differences are less apparent. Harrell's on both oral and written speech of children in sixth grade through high school, Berko's on understanding of plurals and tense by kindergarten children, and my own normative study of children from three through eight years are examples. Incidentally, recent studies of play activities and range of information show the same trend towards less difference in the performances of the sexes than reported a generation or more ago. It may well be that some of the sex differences reflected the tendency toward differential treatment of boys and girls, while the smaller present-day differences reflect the present-day philosophy. We should also recognize that a psychologically and a statistically significant difference are not the same.

The relation between intellectual ability and a child's language has long been accepted as a truism. While it is obvious that poor language development is associated with extreme retardation of mental growth, the actual relationship depends so much upon the measures of intelligence and language used within the normal range.

Intelligence tests of young children are more reliable toward the end of the preschool years, or after speech has developed. Many tests of intelligence have a large verbal component. On the other hand, a performance test of intelligence results in a somewhat different intellectual measure. Thus the type, as well as the particular intelligence test used, is important. The type of intelligence test used is probably particularly important in considering the relation of intelligence to speech and language disorders in the handicapped child.

Those aspects of language and intelligence measures which are most similar obviously show the highest relationship. The relationship between intelligence and vocabulary, for example, has been extensively studied and consistently reported over the years. Terman in 1918 reported a correlation of about .9 between the Stanford-Binet Vocabulary and the Binet M.A. However, sentence length is less substantially related to intelligence. This may well be due to the fact that the ceiling on length of sentence is approached at an early age, but the ceiling of vocabulary size is not approached at any age.

Although many aspects of language are related in some degree to intelligence, the relationship is more apparent when one can look backward in time than when one must look forward to predict what will occur. This presents more problems. For example, if a group of gifted children and a group of dull children are compared at about ten years of age, both statistical and psychological differences will likely be found in such things as the age at which they began to talk, the length and complexity of their present verbalizations, the adequacy of their articulation of the sounds of English, the size of their vocabulary, and so on. On the other hand, as these youngsters are developing, there is likely to be so much variation among each group that in the early years of life some of the gifted will be behind some of the mentally retarded on these same variables.

Intelligence is an important factor in the child's development of an appropriate use of words, but the fact that a child is not talking at an early age does not necessarily indicate a lack of mental ability. You are all aware of these facts, but I think they are useful to throw into the hopper here for discussion.

Other intellective and cognitive functions are related to language growth. The ability of the child to develop concepts of size, shape, form, number, are surely an integral part of his learning to use functional language. These areas are being studied in child development, but more work needs to be done relating these functions to language behavior in children. The same holds true for the relation of such factors as attention span, reaction time and memory span to the language efficiency of non-handicapped children.

The Semantics of Childhood Aphasia

Dr. Wood, Dr. Wepman, Dr. Jakobson, Dr. Wortis, Dr. Eisenson, Dr. Karlin, Dr. Huber, Dr. Bakwin, Dr. Birch, Dr. Bender, Dr. Masland, Miss Haeussermann, Dr. Hardy, Miss De Hirsch

The many names used to designate childhood aphasia each indicate a different aspect of the syndrome or a different diagnostic point of view of the person who employs the term.

Terms indicating special linguistic functions impaired are: alexia, reading disorders, agraphia, motor aphasia, expressive aphasia, receptive aphasia, jargon aphasia, pragmatic aphasia, semantic aphasia, word deafness, psychic deafness, central deafness, congenital verbal auditory imperception, congenital verbal auditory agnosia, dysacusis, central auditory imperception, *and synonyms.*

Terms suggesting etiology: familial aphasia, acquired aphasia, congenital aphasia, central deafness, hysterical aphasia, central auditory imperception, schizophrenic aphasia, *and synonyms.*

Terms attempting to be all-inclusive of childhood aphasia: infantile aphasia, global aphasia, language disabilities, familial aphasia, congenital verbal auditory agnosia.

In the discussions reported in this chapter there also developed a sharp difference of opinion on the relation between childhood aphasia and schizophrenia. Dr. Bender maintained that there is a virtual identity between the two disorders, while Miss De Hirsch and Dr. Jakobson saw them as distinctly separate disorders.

Dr. Wood: As we consider these aspects of language development and interject them into our discussions of aphasia in children we are immediately faced with many questions: What is childhood aphasia? How does it differ from other problems of young children? What are the causal factors? The behavioral manifestations? And, perhaps most important, what can we do about it?

Generally speaking, aphasia in children has been causally connected with problems occurring prenatally, paranatally or postnatally; but the fact that we can diagnose aphasia in the first place assumes that the child has arrived at the age where speech is expected of him. We can assume also that evidence of aphasia, being only one type of language disorder, suggests the possibility that other language disorders, such as alexia or agraphia, may be evidenced also at a later time.

There appear to be certain elements of agreement in the literature concerning aphasia in children. First, there is agreement that cortical damage can be one causal factor. By the same token, it has also been shown that cortical damage can cause a number of other childhood disorders, such as: mental deficiency, motor problems (such as cerebral palsy), emotional problems, and certain types of auditory disorders. Although studies have been done that seemingly support the assumption that brain damage is a possible contributor to aphasia, much of this assumption is based upon studies of adults who have sustained brain damage that, among other problems, resulted in aphasia.

Another general method used to diagnose aphasia in children is done by symptom or behavioral analysis. But there is disagreement among specialists as to the diagnostic meaning of many of these behavioral responses. There are those who suggest that aphasia in children is primarily a developmental problem, perhaps not anatomically or physiologically demonstrable but part of a total delayed development, one aspect of which is delayed language development. There are also those who believe that aphasia might be linked to a familial factor and that learning disorders, including problems of reading, writing, arithmetic *and* speech, may be found in other members of the same family.

Regardless of the cause, we know that the classifications of childhood aphasia cannot be assigned to any child until that time comes when speech is expected to emerge. We know also that we must have some objective measurement of the amount of language these children are able to use at the time of initial evaluation. We should have some equally objective method of predicting what the child's potential level of language might be. In addition, we must be sure that the symptoms we accept as evidence of aphasia are not actually symptoms of mental retardation, sensory involvement, or emotional problems. But even when these factors can be excluded, there still may *not* be sufficient evidence to say "This is aphasia."

Other terms used to describe the child with a language disorder can confuse the clinical picture. There is sometimes a tendency to equate brain injury with aphasia; perseveration with aphasia; motor disability, distractibility, catastrophic reactions, lack of response to the spoken word, or other types of behavioral response with aphasia. Although the child with aphasia *can* have all of these symptoms, these terms should not be interchanged with the term "aphasia."

In other words, the child with aphasia may have a motor problem, an emotional problem, *and* an auditory disorder. He may be perseverative, distractible, *and* difficult to manage. But unless he is unable to use speech on a symbolic or linguistic level at the same time he *is* able to use non-symbolic or non-linguistic material adequately, *and* unless his language disorder is his *primary* problem, then, at least in my opinion, the term "aphasia" is not appropriate as a classification.

Aphasia must be a discrete term that talks about a specific type of language disorder that is limited to the use of speech. This presents a possible problem — that is, we may be railroading ourselves to the point that the term "childhood aphasia" cannot exist as an isolated diagnostic classification.

It appears, therefore, that we must be concerned with the specifics of nomenclature, diagnostics and educational procedures for children with aphasia. Perhaps I have preceded the agenda with these remarks but these are the aspects of aphasia that I hope will be entertained by the participants in this seminar.

Dr. Wepman: We found in our work that it makes a not inconsiderable difference in therapy and education for the brain-impaired when the trauma affected the central integrative functions of the nervous system, as opposed to the traumas which were limited to the transmissive sensory or motor functions. Following this conception of differentially localized damage we have concluded that aphasia, the language disorder, is best considered as a defect in the integrative processes only, while the agnosias and apraxias can be considered as defects limited to the non-symbolic functions of transmission into and out of the system.

This all leads to the suggestion that in our present formulations concerning the child with a communication problem we differentiate between language process disturbances and such sensory and motor acts as audition and speech.

Dr. Jakobson: In the study of children's language the questions of internal speech seem to me particularly important, as it was penetratingly outlined by the Russian psychologist Vigotskij. As Dr. Pribram has noted, language serves not only for communication with others but also for the control of one's own behavior. There are two ways of bridging: the way of overcoming the space, and that is verbal communication; and the way of overcoming the time, perpetuating one's own past as a still vital experience. This is the role of internal speech, the role of language control.

I could add many things but we will have the opportunity to discuss them later. I should only propose to avoid any further discussion about the term "aphasia" and what aphasia is and what it is not. Why should we discuss terms, instead of dealing with concepts, whatever their nick-names would be? I always recall in such cases the words of my teacher, Peshkovskij: "The name is irrelevant. The only important thing is to know what we mean when using the name."

Dr. Wortis: I would like to raise one question for comment, which has some bearing on what has been said in terms of language development.

Although we were asked not to involve ourselves in the discussion of aphasia in relationship to mental deficiency, I happen in my work to see a great many retarded children. In the early days of my contact with this population, with a conventional neurological orientation, I found myself frequently making a diagnosis of motor aphasia in these children because I found so many children understanding pretty well what was said to them, yet not capable of expressing themselves.

Since those early days I have come to realize that in terms of chronological development, input efficiency (to pick up some of the phrases we just heard), comes earlier than the output efficiency.

I am now inclined to view a great many of these cases which look like motor aphasia as types of developmental lags having some organic basis, where the child is capable of exercising the functions of comprehension but has not yet reached the level of language expression.

I call attention to this phenomenon as an observation for comment.

Dr. Wepman: The five stages of language development have a surprising relationship to the five types of aphasic disturbances we have been able to identify in our studies of adult impairment. This relationship can be best seen in studying them side by side as they are presented in the following table showing a comparison of the developmental stages of language and aphasic language types isolated in psycholinguistic research.

STAGE	TYPE OF APHASIA	STAGE OF DEVELOPMENT
1.	Global	Pre-language: characterized by speechlessness.
2.	Jargon	Pre-language: characterized by meaningless autistic and echolalic phoneme use.
3.	Pragmatic	Progressive acquisition of comprehension. Oral expression of words and neologisms largely unrelated to meaning or below level of comprehension.
4.	Semantic	The beginning use of substantive language progressing through nominal, verbal and adjectival words. Characterized by one- or two-word groupings as complete expressions.
5.	Syntactic	The use of syntax or grammar in oral expression.

The aphasic types presented in the table are described in some detail elsewhere.[*] Briefly, however, they are represented rather adequately by a bit of verbal juggling with the table presented. The first two types, Global and Jargon Aphasia, are described by the related stages of development, while the last three types are represented by an absence or dysfunction of their related stages on the developmental side of the table. Thus Pragmatic Aphasia is an inability to comprehend or form a clear, meaningful state and therefore the speech used is unrelated to meaningfulness; the Semantic aphasic cannot use the process of substantive word formulation, while the Syntactic aphasic lacks the syntax of the language.

The continuum described in the scale is not intended as a series of discrete units but as a constantly overlapping process where each succeeding stage emerges while development is continuing in the preceding stage. In this sense each stage has within it a series of steps which, I believe, will in time become identified just as well as the arbitrary five stages presented here. It should be useful, however, to be able to say about a given child that he is midway through stage 2 and at a later time that he is well into stage 3. Or equally it may be valuable to guage the rapidity with which he accomplished the passage through the various stages or the amount of development he still needs to see him through to a completion of language development.

In studying the impaired child the stage of his development should point the way to the establishment of the level of education or assistance that he might need. The scale becomes more than a scale when it becomes a perspective, a way of looking at a given child.

Dr. Eisenson: An aphasic child is one who, as a result of cerebral damage or cerebral dysfunction, presents a syndrome of linguistic and nonverbal behavioral manifestations that distinguish him from other children, both normal and deviant.

Developmentally, the child shows generalized perceptual differences, if not dysfunction, auditory inefficiency beyond any audiometrically determined hearing loss, and intellectual inefficiency over and above any "measurable" intellectual deficit.

Specific behavioral manifestations include morbidity of attention, perseveration, inconsistency of response, emotional lability, and frequently general hyperactivity.

Linguistically, the child shows a marked amount of retardation in the comprehension, evaluation, and production of language and a disproportion and unevenness in the anticipated comprehension-production linguistic ratio. Developmentally, the child does not show expected increments or the "ordered" pattern by which most children increase their linguistic abilities of communicative language.

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[*] See Wepman, J. M.; Jones, L. V.; Bock, R. D. and Van Pelt, Doris: *Studies in Aphasia,* J. Sp. Hear. Dis., 1960.

The aphasic child is distinguished from other non-verbal children by the likelihood that his behavioral manifestations, such as perseveration and over-all lability of performance — as well as sensory, perceptual and intellectual inefficiency — increase as he confronts a verbal-symbol situation and he realizes that a verbal-symbol response is required of him.

I might add that about 90 per cent or more of the youngsters brought to me are relieved of their congenital aphasia immediately by my rediagnosing them as having one of the other difficulties Nancy Wood has mentioned. I don't think much of the developmental language failure I see is really congenital aphasia. But I do think that "developmental aphasia" (or if you wish, "congenital aphasia") is a usable term and a functional term, and that possibly the definition presented can be the basis of what we are talking about.

Dr. Karlin: Aphasia is a defect in the language function due to cerebral pathology. Our knowledge of functional disturbances in brain damage is based on the patient's symptoms. Symptoms are modifications of behavior in various performance fields.

I have proposed the following classification for aphasias in children. The first group, acquired aphasias, I have subdivided into three categories: (1) The acute, due to infections, convulsions, or migraine; (2) The subacute, due to brain tumor or brain abscess; and (3) The chronic, due to hemorrhage or injury.

It is the second group that interests us mainly in this morning's presentation, which is the congenital type of aphasia.

In the subacute form of acquired aphasia, we are dealing principally with brain tumor or brain abscess. We are dealing here with a sick, apathetic, and morose child. Not much attention is paid to the speech and language disturbance. The doctors pay more attention to the basic problem, which is the tumor. The child six or seven years old may show complete mutism. The older child may present a speech picture seen in adult aphasics. Once the tumor is removed, recovery from aphasia is usually good.

The congenital aphasias present a much more difficult and nebulous problem. We are dealing here with a child two and one-half or three years of age who presents lack of language development. There is a marked discrepancy between the child's lack of language development and his reasonably normal performance in non-verbal activities.

As a rule there is no history or any neurological signs of brain injury or disease. The basic problem is a deficit in speech and language. Other problems that these children may present are simply concomitant to the lack of speech and language.

The question may be asked: Is aphasia in children a specific or a general cortical deficit?

Some deny the existence of congenital aphasia unless there is severe bilateral brain damage. In the human brain, however, the parts are not equipotential. For the development of speech, there has to be a normally functioning brain. We can't have speech and language without having a normal functioning brain.

There is, however, an anatomically delimited zone which is essential to language function. This is a continuous cortical area prodominantly in the left hemisphere, extending from the termination of the acoustic and optic nerves to the origins of the motor tracts for articulation.

I believe aphasia is a specific cortical deficit in language function. Because aphasia is a disorder of language, it is therefore a distinctly human disability, and the problem does not lend itself to experimental research with animals.

The diagnosis of congenital aphasia is based upon symptoms. The child may require a period of observation and elimination of other possible reasons for the language deficit. We must adopt a "holistic" orientation and perhaps bear in mind the following dictum: "There is no sickness, there are only sick human beings." Physical examination in congenital aphasia is usually negative. There are no specific neurological signs.

The postural and the righting responses which have been reported to be abnormal in children with reading disabilities are of no value in aphasic children, since these abnormal responses are of value only above the age of six years. It is only after that age that posture becomes static, and here we are dealing with children of two and one-half or three years of age.

The electroencephalogram is of little value. More important, however, is the history. Jaundice, anoxia at birth, hyperbilirubinemia, or a family history of speech and neurological disorders would be of value in supporting the diagnosis of aphasia.

It has been said that we cannot compare the adult aphasias with childhood aphasias. I cannot subscribe to that. I believe we can learn a great deal from adult aphasics and apply it to child aphasics; and on the other hand, we can learn from childhood aphasias and utilize this information in our studies of adult aphasias.

Of the two, the predominantly receptive type of aphasia is more common in children and this type of aphasia has been described under various names.

It has been called (1) word deafness, (2) congenital or infantile aphasia, (3) psychic deafness, (4) central deafness, (5) congenital verbal or auditory imperception, and I proposed the term (6) congenital verbal auditory agnosia. This is descriptive in the sense that it indicates the defect to be on a lower order than aphasia and it localizes the defect to the cortical hearing and speech areas. Agnosia of language, however, belongs to aphasia, and the term "aphasia" is a good generic term, since it denotes a cerebral form of language dysfunction.

The clinical features of this entity are as follows:

A child three or four years old has very limited speech or no speech at all. Negative history of illness or injury. Negative physical and neurological examination. Mentally, child is normal. Child shows tendency to shyness, seclusion and social withdrawal. Child's hearing is the crux of the problem. The parents are certain that the child is able to hear. As he grows older, it becomes evident that he is deaf to speech, and yet he is able to hear sounds.

Dr. Huber: I think that I personally proceed with great caution before labeling a child aphasic. Although I may suspect a child to be dysphasic, I am very cautious about labeling such a child aphasic unless I can determine a number of things: that he has essentially normal hearing; that on a nonverbal intelligence test, when he is old enough to have such administered, he shows near-normal intelligence; that, if possible, we determine if there is localized brain damage; and, what I think is very important, that we wait until the child has enough verbalization to show aphasic symptoms in verbalization or in his comprehension. Otherwise, I find it very difficult to say for sure that I think the child is aphasic.

At the University of Houston they have been carrying on some studies and working intensively with language-impaired children for a number of years. They have devised a language development scale which I think is very interesting and would be very helpful to many of us.[*]

I think hysterical aphasia might have some consideration. I do not really recognize such a thing as hysterical aphasia without brain damage; but I think there is a large measure of hysterical aphasia where brain damage is known and that hysterical aphasia is the result of lack of training. The individual has not been helped in coping with his language difficulties, and so he withdraws from attempts at language. I think we can consider that a form of hysterical aphasia and that it would appear in both the emissive type and the receptive type.

Dr. Bakwin: I think we would do well to use the terms "developmental aphasia" and "developmental lesion" rather than "congenital" since congenital implies the child is born with it, which, of course, he is not.

Some of you have said that it doesn't matter what words we use as long as we know what we mean. I don't think that is very useful. It is important for us to use words which we ourselves understand, but other people must understand them, too.

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[*] This has since been published: Bangs, Tina E., *Evaluating Children with Language Delay*, J. Speech and Hearing Disorders, Vol. 26, No. 1, February 1961.

It isn't enough for us to have a clear concept of what we are talking about. Our words must have meaning for others.

There is increasing interest in the relation between cerebral damage and behavior disorders in general and, especially, reading disability. In the past we have not appreciated the significance of cerebral damage sufficiently, but I think the pendulum is swinging. Certainly not all cases of reading disability are on the basis of minimal cerebral damage.

As far as the relation of alterations in lateral dominance to language disorders is concerned, the evidence is controversial. It is not a straightforward one.

I would like to pose a question regarding reading disability: Can reading disability properly be included under aphasia? If a child reverses "b" and "d," do you call that aphasia? Do any of you call aphasia reversing of letters?

If a child reverses syllables, do you call that aphasia?

MISS TANNHAUSER: It would depend upon the severity of it.

DR. BAKWIN: If a child figures out the word and, having figured it out, does not know what it represents, would you call that aphasia?

MISS TANNHAUSER: Possibly.

DR. BAKWIN: It seems to me that is aphasia. Not confusion of letters, not confusion of syllables, but if the child can read the word and then not understand what it means.

DR. TEMPLIN: It might be a word that isn't in his vocabulary.

DR. WEPMAN: I am an aphasic in French. I can read the word but I can't understand it.

DR. WOOD: Where does alexia come into the picture? Isn't that the term of reception of words through reading?

DR. BAKWIN: I am saying certain forms of dyslexia. Can they be included?

DR. BIRCH: In a sense, I think Dr. Karlin and others have been moving around the periphery in an attempt for a definition of aphasia in childhood, and this is a more formal effort in attempting to define what we are all considering.

I would say we are considering a syndrome of behavior of inadequacy manifested in disturbance of language function which is markedly in excess over other adaptive inadequacies occurring in a child with grossly inactive receptive capacities.

Although the specific etiology is unknown, it is presumably based on pathogenic modification of normal cerebral integrative activity. The syndrome "language disorder" may appear as a development act or as a loss in language function in a child with prior normal emergence of linguistic capacity.

First, we are discussing a syndrome. If we are discussing a syndrome, there is no need to consider etiology within the framework of the definition. A syndrome is a phenomenologic effect. A syndrome is a descriptive set of characteristics which we observe clinically.

If part of the etiology of aphasia in adults or children stems from neurologic damage, I fail to see further why we should worry about the presence or nonpresence of associated characteristics of neurologic damage, such as certain primary manifestations or other manifestations (including distractibility, inaccuracy or orientation, unresponsiveness to certain varieties of stimulation, body image disturbances, and perceptual inadequacy), all of which may occur in a primary manner in association with the neurological damage.

Individuals with such disturbances who do not have disturbance in the language function of a major kind are not in the aphasic group. However, if they do have such a disturbance, I think they might justifiably be considered as hemiplegic with aphasia, perceptually disturbed with aphasia, cerebral palsied children (and that is a very loose term) with aphasia, or diplegic children with aphasia.

In most of the discussion there has been some kind of associated strengths. That is, the individual who is an aphasic is considered to be asphasic if he has other characteristics with respect to conceptualization, symbolic functioning, or cognitive activity, which are at a level of sufficient height to permit one to anticipate that such an individual would be capable of using language.

Dr. Bender: What we are considering is a disorder in the development of language in the individual child whom we are studying, and in more general terms, the characteristic of the disorder in the developmental processes of language. It is probable that there are a number of different developmental disorders which may be called aphasia in childhood. We cannot refer to this problem as though it were a syndrome or a disease entity.

The developmental lag in those children who have language disorders is a total developmental lag. A developmental lag will also be seen in motor areas and in personality organization, in space and time perception, and in cortical unilateral dominance. If I should try to define a specific state of non-language which I would call "aphasia" in a child, it would be a transitory state at the end of the second year in the developmental language difficulties, when the child is still groping for modes of expression which would be specific enough to be understood in the cultural group in which he lives. Later on, unless they are isolated, misunderstood, these children will develop some other type of problem, such as dyslexia with its associated difficulties in social, academic, and emotional adaptation.

Dr. Masland: Sometimes a complete lack of knowledge is at least an asset to the individual who suffers from it, and it avoids his preconception being confused with facts.

It seems to me, however, that the term "aphasia" is primarily a pragmatic term just as "cerebral palsy." When we speak of "cerebral palsy" we are not dealing with an entity. We are dealing with a syndrome, as has been mentioned here. The importance of it is that it refers to a group of children for whom there is needed a specific diagnostic and therapeutic program. It is a practical term.

In a certain sense, the term "alexia" is similar. There are many diseases of which "epilepsy" is a manifestation. Then, again, the value of the term "epilepsy" is the fact that here are individuals who require a certain diagnostic and therapeutic regime.

I think this is the problem that we are tangling with today. It may be the term "aphasia" is not the one we are to use. Maybe we ought to use the term "language disability" and use this term to refer to a group of children who don't talk or don't read, who have difficulties in the use of language, and who, for this reason, require a certain diagnostic procedure and presumably a certain management and therapeutic or educational program.

Miss Haeussermann: If a child cannot appreciate the meaningfulness of language, if such a child does not even seem to be aware that people communicate with these noises from their mouths, then I would feel that child to be a child with a receptive aphasia, possibly.

The child who can understand communication or verbal directions can respond with gestures — sometimes even searches for a word. If he is intellectually on the level where a child is expected to comprehend language, the child is expected to formulate some language if, by testing in other areas, he would be mentally on the level where this is expected. This is a child I would tentatively consider to be a child with expressive or motor aphasia.

This does not include the child with total aphasia.

Dr. Hardy: What is childhood aphasia in the reference of this Institute?

A useful definition may well exclude children who have only impaired hearing and those who have only delayed speech for reasons assignable to problems in audition, mental incapacity in the sense of biologic deficiency, social and emotional immaturity, and so on. A useful definition may well include children with dysacusis (that is, central auditory pathway dysfunction which affects discrimination and recognition of acoustic stimuli) or auditory agnosia.

In our clinical population of preschool-age children, approximately

1200 a year, perhaps one-third of the children with central auditory disorders also have problems in the learning and retention of linguistic meanings. Some are obviously brain-injured from due cause, many are not. They may show symptoms of various kinds of maldevelopment or dysfunction, but are without the classical neurologic symptoms of motor incoordination or incapacity. For a large proportion, the causal picture is completely obscure.

Dr. Bender: So, it would bring me back to my concept that a non-speaking child, and whom we might call aphasic, is a child whose cortical integrated function is so plastic that the pattern-making is at a level that has been inadequate. The problem is how to get this pattern-making more adequate. In order to try to solve this problem, we have to think also of etiology.

I spoke this morning of the one group which I think is a developmental lag, due to the fact that the language areas are the last evolved in evolution, and they are the most vulnerable and the area in which plasticity is, therefore, most functional. That is one etiological group. Then I have to add to this another area which I do not think we can omit in discussions such as we are now having. The problem of childhood schizophrenia must be brought into consideration.

If you want to see the greatest variety of aphasic disorders in children, and to see them change from one into another; or to see a child speak normally and then become aphasic and go through all kinds of aphasic anomalies and then learn to speak more normally again; if you want to have a chance to observe the greatest number of aphasic anomalies in early childhood, you should look for the schizophrenic children. These show you every conceivable type of clinical phenomena. One almost gets the feeling that the children themselves play with the various phenomena of aphasic disorders and speech development. I don't think that we can leave these children out of the category we are discussing, nor should we be afraid to say dirty words like schizophrenia, if they are useful to us.

Miss De Hirsch: Dr. Bender's introduction of schizophrenic children into the discussion is of vital importance.

Aphasic children show the same plasticity and immaturity as do schizophrenic ones. In both groups there is difficulty with interpersonal relationships, impoverished verbal output, and sometimes the use of bizarre, idiosyncratic verbalizations, which, according to Sullivan, are not "consensually validated." However, the dynamics are different for the two groups:

The schizophrenic child's life experiences are so fragmentary that verbal concepts expressing these experiences are, of necessity, arbitrary and haphazard. In the aphasic child, it is not so much the life experience as the verbal concepts per se which are unstable and diffuse.

It is essential, therefore, to observe the child's total functioning rather than his verbalizations to decide in which category he belongs. On closer observation one will find:

1. That the schizophrenic child's ego organization is much more diffuse.
2. While instability and plasticity of perceptual, motor and conceptual experience is a feature in both groups, it is less pervasive in aphasic children and usually does not extend to his personal relationships. As a result, the quality of relatedness in the two groups differs: it is much more solid in the aphasic youngster.

Dr. Bender: I would say that if I had a relatively small number of children it might be a biased group, but children are referred to me from so many different places. I think I estimated when I was at Bellevue that there were ten to twelve per cent of the children who were schizophrenic. It may have increased as we went along.

Dr. Kanner had a very selected group of children. A limited type of children were referred to him. Namely, there had to be parents who were sophisticated enough to know how to find the professor at Johns Hopkins.

Dr. Jakobson: On the question of schizophrenia, from the point of view of a strictly diagnostic analysis based on the linguistic material — on the records from a given person — there is a sharp difference between schizophrenia and aphasia. There are specific features of the linguistics so that you can make such a diagnosis. I can cite a case and say it is schizophrenia without knowing anything about the patient except the fact of observing this thing. This is not so in other cases. The new literature on the linguistics of schizophrenics shows the peculiar facts in this.

Dr. Wood: The reason I asked for an opportunity to make a few remarks is that we have just completed a five-year study of children whose basic problem was presumably one of mental retardation. I would just like to give you a few things that came out of this study having to do with management.

We started with 1200 case histories of children whose only diagnosis at the time was delayed speech. We got together a group of medical people and three speech therapeutists. We asked them individually to go through each of these histories as written and attempt to come to some conclusion as to where each child might be more specifically classified: as to whether the problem of lack of speech was due primarily to emotional disturbance, hearing loss, language disorder or some other classification.

We know the way to do research isn't to go back, but it was our beginning point so that we could have some information in making an evaluation. After much discussion, we were convinced in our minds that in 856 of these cases we could come to some conclusion as to classification of the problem. There were 344 classified as "not differentiated."

Then we came down to some 200 histories which we took. We tried to get items of information that would go along with the behavior picture that went with the classification. Something like forty per cent of the children were, in our opinion, truly mentally retarded and were not using speech because of this. Some twenty per cent of the children had hearing loss. There were some ten per cent who, in our opinion, seemed to be more predominantly emotionally disturbed.

Now, these were not the severely handicapped. These were children who came out of homes of various sizes and shapes, and who were not using speech for reasons which you could not detect the minute the child came in the door. These had been missed in our original screening.

There also were twenty per cent in whom we felt the primary reason for not developing speech was a language disorder. Then we decided also that with some ten per cent of the children we didn't know what they were. We called this the "not differentiated" group.

Then we had a place for the children with language disorders, hearing loss, emotional disturbance, and mental retardation in the school system or our own center.

The ten per cent in the "not differentiated" group we could not keep, but we got fifty children who looked as much like those children as possible and put them in a daily therapy program for six months. At the same time we had an individual conference with the parents once a week; a group of parents met once a month and we tried to get as much information about this as possible.

During this period we used every non-verbal test we could get. Fifty children were selected out of some 300 who were thought to have primarily a language disorder. After study and during the process of these six months, we found that, in fact, five of them were really mentally retarded children. About half of the remainder seemed to have a fairly pure language disorder problem. The remainder of the fifty had a language disorder coupled with mental retardation.

One of the things that came out of this history breakdown of subject scores was this: You know the test where you see the picture of a chair with one leg missing and then ask the child to draw the remaining part? The children we had called pure language disorders had a mean score of 137 on that test. The ones who were mentally retarded had a mean score of 77.

Although we have done well, we still have to have somebody broaden the educational basis upon which we have to work with this type of child and get him gradually into the environment where he must eventually live.

Dr. Birch: The first thing that happens, and I will take a concrete illustration, is that the child is examined by the pediatrician, who also finds that Johnny does not speak and raises a series of alternative possibilities. Maybe he is deaf. Maybe he is mentally retarded. Maybe he has central auditory imperception, misperception, confusion, or what have you. Maybe the child is aphasic.

Where should the child be sent to find out about it? The child is sent to a major university department. The audition is studied, and it is found by this department that the child is unresponsive to tones of pure quality having intensity of ninety decibels, using the instrument as the decibel base.

Then the pediatrician receives a report that Johnny is deaf. The mother is not satisfied with this. She does not wish to accept the diagnosis of the pediatrician. She is not convinced Johnny is deaf because of the unevenness of the function.

The child is then sent to a special hearing pathologist who is under a different department, and at this point the child is diagnosed as not deaf at all. *Who is the fool who diagnosed this child as deaf? This child has central auditory imperception.* What does this mean?

The pediatrician calls me up and asks me what this means. I tell him that it means different things to different men in different places, and I tell him what it means to me. The mother is not satisfied with this, and the child is then sent to a center where he receives a neurological examination, and at this place the child is diagnosed as aphasic. This is an aphasic child.

The parent now has three diagnoses: one of deafness, another of central auditory imperception, and a third of aphasia. Which of these is the most socially desirable? Which of these provides the greatest amount of dignity to the disorder? Which of these is the one about which the parent will find it possible to respond most effectively and with the minimum of disruption?

I think that this little illustration, which is actually from a case history, is not at all unusual in this area of disturbance. I think it reflects several needs of a community kind and of the investigative kind that perhaps may be highlighted by it.

First of all, I think that it is utterly necessary for us to establish much more clear-cut objective criteria for the making of a given kind of diagnosis, to achieve some agreement among ourselves, not necessarily as to a name or word but as to what an X difficulty and a Y difficulty is.

I am sick and tired of hearing people make claims for therapeutic methods when they do not give me an adequate description of the characteristics of the child who has benefited or who has not benefited from this therapy.

While it is perfectly true that one should have the greatest regard for the huge body of experience that has accumulated in the area of training and education of children with specific sensory, integrative and motor handicaps, I think it is one thing to have respect for this body of experience and another thing to have respect for the explanation as to why the method used has worked.

Is Childhood Aphasia a Definable Entity?

Dr. Masland, Dr. Karlin, Dr. Wood, Dr. Wortis, Dr. Doll

A definition, by the very etymology of the term, connotes a delimiting of concept. The previous discussion concerned chiefly with definitions as such, gave little consideration to the practical significance of these definitions in relation to therapy. The following discussion, in contrast, introduces the need for separating "childhood aphasia" from related conditions, syndromes or diseases in the consideration of establishing treatment programs.

Dr. Masland: I think we have from a practical point of view another concern, and I suspect this is the one that is back of this meeting. That is, the relation of this management and educational program to the total management and educational program for the normal and typical child.

Is this a sufficiently discrete program that it should be separated from the special education, or should we separate it from the educational program for the slow learner or the educational program for the mentally subnormal group? Or is there sufficient overlap that these two are more properly dealt with as part of our evaluation of the intellectual abilities of that child who has a problem in this field?

I believe this is where we stand.

Dr. Karlin: Dr. Huber has put out the question of whether we should differentiate an aphasic child and a brain-injured child.

The term "brain-injured" doesn't mean very much. Today everything is a "brain-injured" child. Even with the mentally retarded child, the mother is much happier when we tell her that her child is brain-injured than if we say that the child is mentally retarded. It sounds better.

I think we should limit ourselves. The mentally retarded is one group, the cerebral palsied is another group, and the aphasic is another group. If we put everything is one basket as "brain-injured" I don't think we learn very much about aphasia.

I think we should stick to the term "aphasia" or whatever term you want to use but indicate that it pertains to a certain specific type of language disability different from mental retardation, different from cerebral palsy, different from epilepsy. Only then will we really learn something about aphasia in children.

Dr. Wood: From listening to this discussion, I feel very definitely that there are possibly three different types of aphasia in children.

The first stems from organic problems.

Second is the inability to use the spoken word on a symbolic level, on either the emissive or receptive level or a combination of both. I think there are more receptive aphasics, as we think of them, than expressive, possibly because there is where it shows up. There is no such thing as a truly expressive problem because it carries with it a combination of taking, understanding, assessing, organizing, and putting out. I have never seen what I call a strictly expressive problem. It is always the receptive problems. We have them here. Each of you has receptive problems.

In differentiating from the symbolic problem of the spoken word as being aphasia, that is relegated as organic. It may be developmental and, possibly going along with Dr. Bakwin's point, that this has to do not with the catching-up process, because I do not think a child ever catches up. When the void is there, it is there. Unless it has been misdiagnosed in the first place, I can't see how he catches up with a problem of that sort.

Third is the type in which this big familial factor seems to me to be extremely important.

So, to me there are three basic, broad brackets of aphasia.

Dr. Wortis: Dr. West drew a diagram for us earlier involving some interlocking circles – a sort of Ballantine trademark – and it carried a little bit of the implication to me that these interlocking categories may be regarded as relatively discrete. For instance, children with mental difficulties might also have to wear glasses. You would thus have two groups, and there would be an interlocking area where some children suffered from both defects.

I think the true state of affairs in relation to some of the categories we are now considering is different than these diagrams might imply. For example, we were advised in the early notice which we received for this meeting that mental retardation should be excluded from consideration. There was in that statement an implication that mental retardation is somehow in a distinct category from the category of language disturbances. I think in practice too sharp a separation of these concepts could be harmfully misleading.

Before coming here I checked through some data in my own clinic regarding the single item of articulatory speech difficulties. I speak now only of that large group of retarded children whom we assume have what we call chronic brain syndrome. In that retarded population we find articulatory speech difficulties so common as to be almost universal.

If we divide our clinic population into two broad groups — I need not go into the details — with the mild and borderline retardates in one group and the moderately severe and profound degrees of retardation in the other group, we find the articulatory speech difficulties are absent in only twenty-five per cent of the upper group and are never absent in any of the more severely retarded. If we make a distinction in the articulatory difficulties, in the mild or borderline group we find ten per cent are severely affected by articulatory difficulties, and in the more severely handicapped group sixty per cent have severe articulatory speech difficulties.

It is also interesting to note that approximately five per cent of this retarded group were also diagnosed as aphasic, and as many as twenty per cent had what we regarded as a disproportionate lag in language development.

I have spoken now mainly of articulatory or expressive speech difficulties. But if we assume (and I think there is reason to make this assumption) that a diffuse and minimal brain damage tends to affect all higher integrative functions on a receptive level too, if we had time and equipment and skills to go into it we would find a somewhat analogous situation.

So I think we must appreciate that many of the children who come to us with initial complaints of retardation or delayed speech — and it is a very common way for parents to formulate the problem — are often really suffering from broader involvements of higher integrative functions. Conversely, those children who come with initial complaints on the language level are also often suffering from broader involvements.

We, too, have found, as Dr. Bender has found, that in children who are destined to be labeled "schizophrenic" there is often an early complaint of difficulties in the language sphere. That is one observation I wanted to make.

Dr. Doll: While we can distinguish aphasia from mental deficiency, can we separate it from hearing impairment, emotional morbidity and other categories? It does seem that each of these categories may co-exist in aphasics as multiple handicaps. Therefore, I think we could borrow from the other categories those aspects of behavior which impinge upon aphasia, whether intellectual deficiency, hearing loss, general brain damage, or other. All of these will have some component impact on the aphasia itself.

Someone has quipped that "we are suffering from the hardening of the categories." This applies a bit cynically to aphasia as well as to related categories with which we are dealing. This preoccupation with differential categories has a tendency to divorce particular disabilities from the child as a whole, and from the related categories which may be present only in less conspicuous degrees. "Evaluation" is concerned with description as well as with differentiation. In the psychological evaluation of children, we should pay much more attention than we commonly do to the descriptive aspects of total behavior.

Likewise, in place of "therapy," I prefer "supportive education." Similarly, instead of "psychotherapy" I prefer "educational counseling." These several terms produce different conceptual effects.

These conceptualizations focus on children's needs, their total needs. We, therefore, go beyond the categorical problems and attend to the needs that flow from such problems, or which may even to a degree have created them.

I shall not be very happy in this field until we have a valid measurement scale. The measurement of language is one of the crucial deficits in the present study of aphasia. Our discussions of aphasia do not generally include the measurement of its degrees. Moreover, the lack of measurement prevents us from distinguishing as accurately as we should between receptive and expressive deficits. Yet this distinction is frequently of marked significance.

The Causes of Childhood Aphasia

Dr. Masland, Dr. Pribram, Dr. Eisenson,
Dr. Karlin, Dr. Bender, Dr. Hardy

Early in the Institute Dr. Masland warned against the dangers of oversimplification of the statements of etiology . . . two separate patients with apparently similar brain damage may have linguistic involvements quite dissimilar in character and degree, if certain other factors have been operative. On this subject of etiology many of the participants, speaking from diverse points of view, made vigorous and incisive comment or raised significant questions.

Dr. Masland: I think we must recognize that there is now experimental evidence to indicate that the character of the defect and the severity of the defect produced by cortical damage or excision is also influenced by the phasing of this injury and by the educational experience of the individual prior to and subsequent to the occurrence.

Thus, in attempting to correlate anatomy and structure with function we are faced with the problem that we do not have adequate anatomical information available and that the character of the deficit varies with the total size of the lesion, the age at which it took place, and certain phasing and educational experiences which can modify the results.

Dr. Pribram: Classically, the way in which aphasia has been analyzed is in terms of "sensory" input or "motor" output: a receptive aphasia and an expressive aphasia.

None of you here, I am sure, believe this. Nevertheless, we are almost stuck with such a dichotomy for lack of anything better. We do what Dr. Masland did and what I do so often; we slip back into a terminology because this is the way we were raised. On the other hand, we have somehow to categorize things on the basis of the evidence since the unitary processes notion of aphasia does not quite fill the bill, either.

I once asked all of the neurosurgeons with whom I have worked, including Drs. Percival Bailey, Paul Bucy, and others, if they or anyone with whom they had worked had ever seen a pure case of expressive aphasia. The universal answer was "No." So we are thrown back to some more unitary notion based on a "receptive" type of aphasia, and this does not quite fill the bill. If the receptive-expressive dichotomy does not answer our requirement, where do we go from there?

Professor Luria of the University of Moscow has studied the development of language in children. Luria's idea is that language has two functions; these I believe are similar to Professor Jakobson's two "functions." The two are (1) that language is used to communicate — this is the common, ordinary way in which we use language; and (2) we use language to map, plan and control our own behavior and other people's behavior. This latter is not merely a matter of communicating.

Dr. Birch is smiling; I hope he will have something to say on this. What Luria has done with neurosurgical patients is to use mathematical statements rather than verbal ones in order to analyze the difference in effect of different brain lesions. May I read you his statement.

> "We gave some simple problems in arithmetic, such as 'on two shelves there were eighteen books, on the first double the number on the second. How many books were on every shelf?'
>
> "Parietal lobe patients, and these are very crudely and roughly diagnosed, showed 'counting disorders' and a sort of 'simultan agnosia.' They preserved all of the strategies of problem solution; they noticed the right way of solving; they could actually write the solution in algebraic terms. The troubles started when counting was required in the arithmetic operations. The frontal lobe patients, on the other hand (and mind you, these are not lesions of Broca's area but are way anterior and involve the medial and basal areas of the frontal lobe), showed a picture which was the reverse. They could count all right, but the strategy of problem solving behavior was disturbed. There were no real plans of problem solution, no way, no hierarchy of steps; all that was replaced by operations with numbers."

A beautiful analysis — could language function be impaired differentially by different lesions along the lines provided by these experiments?

Dr. Eisenson: Let me throw this out as a kind of hypothesis on which we might work: I think that brain damage, any kind of brain damage, produces generalized deficit. This observation comes from my recent research on adults with right hemisphere damage, who, according to the literature, would be free of linguistic deficiency. Nevertheless, these cases, not having read most of the literature, show a general conceptual deficit, an impoverishment of richness of language, an inability to deal with abstract sentences that the non-brain-damaged do not reveal when you match them for age.

I think any kind of brain damage, whether it is incurred in the left or right hemisphere, produces deficits. We don't have brain tissue to spare. We must distinguish between (1) the adult's ability to produce language in conventional forms, the sounds of something that is said and being thought; (2) the ability to think with language and the deficits that may be the result of them when certain verbal habits have already been established; and (3) the deficits or the disabilities, the limitations that are present when the damage is incurred by the child at a time before these verbal habits have been established.

As a kind of framework I would like to make the second part of the speculation that the specific function which is most obviously impaired is that function which had been developing when the damage occurred. If a child was busy learning arithmetic processes when he incurred damage this function would most likely be specifically impaired over and above the more generalized impairment; if a child was learning to relate a couple of words in a unit, as a sentence, then this kind of function would be more specifically disturbed than generalized function and language behavior.

I think that it is essential for us to hold very clearly the distinction between language that is rich in conceptual development, language that is both the tool and the product of the related processes of abstraction and conceptualization, and the kind of verbal behavior that employs the same linguistic forms but is not a reflection of richness of meaning and of thinking.

Dr. Karlin: I am going to limit my remarks to raise a few questions.

In the discussion on neuro-anatomical background of language the importance of the cortex was greatly stressed. I would like to introduce the importance, possibly, of the cerebellum, which has also to do with proper coordination of movement. Future research would be to investigate the position of the fetus in the uterus and the possibility that abnormal positioning has to do with disturbances in the cerebellum which later may have an effect on the speech development of the child.

I am just suggesting a possible additional problem that has to be investigated: not only the cerebral cortex but the cerebellum also may have something to do with the proper coordination and the proper functioning of speech and language.

Dr. Bender: There are some differential features between the developmental language disorders and deficit disorders such as mental deficiency. The deficit disorders produce concrete thought processes. The developmental disorders produce abstractness starting from global undifferentiated perceptions and responses. This follows from the developmental process of personality, motor, perceptual or expressive areas, from a global undifferentiated pattern, and then maturates by progressive complexities.

Growth comes by integration, and by more and more complicated internal differentiation. So our first awareness of the child's perceptual difficulties is that he is too abstract. We may have to make a child sacrifice his abstractness in order to acquire language (and I really believe that is a sacrifice) and teach him to be more concrete and usually compulsive.

I would like to refer to one other statement that has been made here. If damage does happen in the cortical speech areas in a child around birth, there is said to be compensation or taking over by other parts of the brain. I don't think there is any proof whatsoever of this compensation. I don't think there is any proof that another part of the brain takes over. In the first place we don't have any proof as to what part of the brain initiates the original functioning of language in the very young child. We do not have evidence that specific damage at this early age lowers the level of organization. Remember, Hughlings Jackson was responsible for this concept. But I would say that it is probable also that the organization is of a somewhat different nature in that it is more plastic. This does not mean that limitation in function is transitory but that there is no limitation in ultimate development.

Dr. Hardy: Certain kinds of operations, however, pertinent to this reverberant cerebrospinal system, are quite clear, and from them some useful facts may be adduced. The basic problem is to try to find out something about how the CNS works in each child who is not naturally learning language.

First, it is useful to determine whether *auditory discrimination and recognition* take place. These are functions of the central pathways of the auditory system, dependent upon the sensitivity of the end organ.

It can be said with considerable certainty that the auditory system (probably the primary mechanism in the normal development of language-meanings) functions in terms of sensitivity, discrimination, and recognition. Sensitivity is largely, but not exclusively, a function of the conductive and sensory-neural elements of the peripheral mechanism. Discrimination involves both peripheral structures and central pathways; recognition, while dependent upon both sensitivity and discrimination, is a CNS function.

Many children are thought to be aphasoid whose only major problem is the incapacity to discriminate auditory stimuli. Without consistent discrimination, there is obvious deprivation in recognition, which underlies processing and tracking. With a breakdown somewhere in the high transmissive pathways of the central auditory system, a baby may present quite normal auditory orienting reflexes at four months of age; then, in later months, because of inability to process the detail of sound, the system may become inhibited, and he may well not respond to any sound that is causal in his environment.

This simply demonstrates one of Pavlov's well-known "laws of learning": the unreinforced stimulus (which could well be the problem with a breakdown at the cortico-thalamic level of audition) tends to produce inhibition. Some of those present have been working in this milieu with adult aphasics, and with profoundly interesting findings. When one looks for this kind of problem, he finds it daily and not infrequently with further problems in the learning of and memory for verbal symbols.

Both pitch and loudness are involved in discrimination and recognition. The echolalic child may well be able to handle both with a high degree of precision, and yet be so attention-distracted that he cannot remember the sequence of auditory detail relative to meaning for thirty seconds.

Second, there is needed a careful study of function in terms of *auditory and visual* (and tactile) *pattern-perception,* foreground-background recognition, and related comparative activities.

Early in life, the normally developing child learns how to use an auditory self-monitoring system, a kind of servo-mechanism, which becomes the control-center of his capacity to hear, to listen, and to reproduce meaningful utterances. Some children cannot naturally do this: among this group, some develop physiologic dyslalia, others are aphasoid. One of the bases for the development of this self-monitoring mechanism is the learned capacity to select the important parallels in the relation between vision and seeing, as in that between audition and hearing. The auditory experience is the more kaleidoscopic and evanescent, however, and probably more dependent upon reinforcement (what William James called "the expectancy of sameness") in the day's experiences.

It seems clear that one of the deficits of a highly distractible child who is not learning language is a fundamental inability to pay consistent attention to the succession of stimuli which makes the learning of verbal-auditory meanings possible. Possibly, this kind of differentiation involves the child's image of himself in contrast with other personalities and events. The only real connections between personalities, negotiated through our neurologic systems, are made by language and speech. Not uncommonly, we find aphasoid children who have quite as much difficulty with visual as with auditory recognition and recall; they simply cannot perform as symbolic pattern-makers. Some stimulus "out there" seems to interfere with their capacity to handle the thing that is "here."

Interestingly enough, there is oftentimes a clear familial history of problems in learning to read. Such a combination of incapacities in making relationships can scarcely be accounted for in terms of focal lacks. Rather, there must be some basic difficulties in forming patterns among perception, understanding, and recall. Various aspects of these kinds of problems can be described in terms of the child's capacities to center attention, in both vision and audition, to differentiate among different patterns, and to attend to the appropriate foreground within the distractions from the background.

An appositive problem is that of the child who tends to *fix attention,* and who is therefore unable to process successive stimuli in rapid continuity. Our normal capacity to process auditory information, and to "track" it in complex succession, involves a matter of a few milliseconds per unit of information. In trying to identify the aphasic child, then, it becomes important to find out how this works with him. For instance, the handling of a few versus many units of information. *Can he remember two units, but not five? Can he remember the last two units of a series of seven, but not the first three?* With a child who has some verbal capacity, at least in the sense of imitative speech, this sort of thing can be well managed with the use of forward and reverse digits, or, in visual terms, with the Knox cubes.

We saw a seven-year-old a few months ago, referred as deaf, who illustrates the point:

> He has a severe auditory problem, a vicious, sharply down-dropping sensory-neural lesion which involves a major loss in sensitivity. Yet, what most bothered his teachers was his difficulty in academic learning in the face of the fact that he seemed bright.
>
> He is bright in some ways, with a non-verbal performance level of something like 120. He can read and lip-read single words. He cannot remember three forward-digits out of serial order with any combination of visual and auditory stimuli.
>
> He is deaf, as various educators use the term; he is also aphasic, and had better be taught accordingly. He is fairly good in the elements of arithmetic, but cannot describe the simplest page of *Dick and Jane.*

There is ample evidence that many of the classical "failures in learning to lip-read" were aphasoid children with hearing problems augmented by inability to keep tuned in on successive sensory stimuli.

The function of *scanning* seems vitally important to the development of verbal-auditory memory and recall. The efferent pathways of the auditory mechanism, the brain's organic listening system, are no doubt involved in this activity. The function of visual scanning is obvious in relation to rate of reading. It seems equally obvious with regard to processing auditory stimuli. The stimulus-bound child need not necessarily be hyperactive; he may be perseverative. The point is that his modes of relating himself to his environment are not free and versatile. He takes in his environment too quickly or too slowly, or inconsistently in an in-and-out fashion. In consequence, he becomes "bound" to a particular order or degree of stimulus out of context, so to speak, with the ongoing state of affairs in his environment.

At the extreme (and perhaps for relatable reasons) some schizoid children show this same kind of trouble in appraising the ongoing situation. So do some athetoid children, whose inhibitory dysfunctions keep them out of good temporal touch with successive events. There are various ways to think about this function of scanning, and to observe it. The younger the child, the more difficult the observation. One must learn how to utilize the reports of parents who are good observers: as with a little "deaf" child we saw last year; he could not respond to most environmental sounds but consistently stood near a kitchen window to appreciate the twittering of birds each morning, birds he could not see from that position. He simply fixed bird-sounds, and little else.

A final capacity (or, from the current point of view of a language disorder, lack of capacity) is what has been called *tracking*. This is a distinctly human attribute, as it pertains to the use of verbal symbols, probably dependent on the development of a frontal cortex. It is a matter of being able to process an indefinite variety of incoming information, employing all the attributes of the sensorium, and to relate this to previous and presently pertinent experience. With a homely simile, it is what one expects his guide to do when he is hired for a hunt. One hires him because of his reputation, and he is expected to produce; to take the hunter into the deep woods (and to get him out); to read the signs of nature; to anticipate the habits of the animals sought; to find them in the right way at the right time; and then to set up a shot the hunter cannot miss. This is tracking. In normal social intercourse, we are utterly dependent upon this nice combination of *memory* (stocking the storehouse with pertinent, ongoing information) and *recall* (taking from the storehouse what is applicable and pertinent in dealing with the needs of the current situation).

This sort of processing is the essence of verbal-symbolic capacity and use, and the lack of it is one of the hallmarks of what is called aphasia in children. Involved here is the processing in rapid temporal order of many successive bits of information. This is the essence of human learning and communication. The child who lacks this capacity of tracking is profoundly handicapped. Moreover, the use of pantomime and gesture early in life does not negate the possibility of a profound disorder in the potential use of verbal-symbolic language.

True, there are various levels of "language," but this does not mean that the levels are progressive in development, nor that one level is equal to another. The normally developing two-year-old needs only one verbal stimulus to learn a new word that is suitable in the context of his environment and experience. That our deaf children need a thousand such stimuli, and our aphasic children ten thousand, is not remarkable.

In broad generalization, we are concerned in childhood aphasia with problems of learning, memory, and recall in verbal-symbolic reference (largely integrative in normal function), the details of which can be observed by the study of various attributes of CNS function. Etiology, per se, is not a very useful indicator of the individual problem. This is true even when one is observing an obviously neurologically damaged child. We see many Rh-athetoid children who have auditory problems, hearing losses in sensitivity, dysacusis, aphasia, and dysarthria, alone or in combination. That somebody has diagnosed a child as an Rh-athetoid does not explain the nature of the communicative dysfunctions.

Some useful categories of clinical observations and description include:

> (1) the detail of auditory discrimination and recognition, relative to sensitivity; the integrity of these functions of hearing largely controls the usefulness of auditory stimuli in the learning of verbal-auditory language;
>
> (2) the determination of capacity in foreground-background perception contributes much to an understanding of a child's capacity to relate meaningful incoming sensory information; this capacity is largely a function of attention;
>
> (3) the fixation of attention is an apposite trait; with this tendency, the ability to manage rapidly successive stimuli is usually seriously affected;
>
> (4) a related capacity has to do with the presence or absence of stimulus-bound behavior, an inability to relate incoming information appropriately in the context of events in the environment;
>
> (5) ability or disability in tracking; this is a kind of additive function, dependent upon all the others. It is the capacity to process multiple bits of information in terms of mnemonic experience, and to organize, in recall, a response or attitude that is appropriate to the context of the situation with the use of verbal symbols. At its best, this is "verbal thinking" and adequate verbal communication. We all see many children who, say at age six years, achieve a six-year level in word-meanings, but who cannot manage the complexity of a sentence. This is a form of disability in tracking, although it is not always labelled *aphasia*.
>
> Such a youngster may well illustrate a kind of suboptimal function, rather than biologic deficiency. This is a distinction worthy of note. The biologic deficiency, as in the idiot, is self-limiting. The suboptimal function is commonly amenable to change through learning, through, if one wishes, a reorganization of relationships.

It seems clear that many brain-injured or maldeveloped children exhibit CNS signs of suboptimal function. These are the children with a scatter in performance which may range from 60 on some items to 120 on others. They need help, the nature of which may be outlined by means of detailed differentiation of CNS capacities and limitations.

These must be qualified by the nature of the child's environment. The effect of deprivation of one kind or another may be powerful, indeed. Whether this exists in the form of parental guilt and withdrawal, generally inadequate stimulus, or gross suppression, the social-emotional effects may be profound. When a child cannot naturally learn what is fundamental in his biosocial existence — language and speech adequate for communication — because of suboptimal function, he typically becomes frustrated and distraught, the emotional sequellae of a severe disorder of personality.

The differentiation is important. Such effects on the deaf child, who cannot understand nor be understood, have been quite well documented. What of the aphasic child? How does he apprehend himself? What are society's images of him? Not very many years ago, the child with a cleft palate was considered an idiot in many communities, simply because his speech was strange.

What are the social images of the child who does not talk at all because he cannot remember what he hears? What do parents think about these children? What happens to parental empathy? These are matters which need extensive investigation. Public education regarding the status and needs of aphasic children, whose numbers are rapidly increasing, has scarcely begun.

It is often not too difficult to make a diagnosis of childhood aphasia, whether one is dealing with an obviously neurologically involved child or with one who is only aphasic. It is extremely difficult to convey the details of each child's capacities and limitations. A suitable descriptive vocabulary is not freely available. Moreover, much of the detail of each child's problems and capabilities must be derived from situations that might be called "diagnostic" or "creative" teaching, wherein various situations are carefully structured in order to control competing stimuli, and to learn how best a particular child may learn.

Then, too, because of common etiologic or developmental factors (genetics, intrauterine chemistry, infection, and so on), there is a high prevalence of combined problems of aphasia, of dysacusis, of motor discoordination, and of visual tracking such as may well be involved in "specific dyslexia."

A nice balance between diagnostic teaching and diagnostic reassessment seems to be a *sine qua non*. Even aphasic children change as a result of development and learning. The nature and detail of whatever changes occur are well worth periodic reconsideration.

Childhood Aphasia and Handedness

Dr. Roberts, Dr. Masland, Dr. Karlin

It was formerly believed that injury to the "speech area" of the left hemisphere of the cerebrum would produce aphasia in a right-handed person, while a similar injury to the analogous area of the right hemisphere would not. It was also believed that a similar relationship obtained between aphasia and injury to the right hemisphere in a left-handed person. As various speakers discussed their own findings, this apparently logical principle of neurological obverse seemed to lose its validity. Also reported here is a study tending to show that brain damage retards the development of "handedness." Tabulation of this study shows the interrelation between (1) handedness, (2) brain damage, and (3) intellectual facility (presumably including linguistic functions).

Dr. Roberts: I would like to present a few case histories to illustrate some of the problems that we have faced.

The first patient was six years of age when first admitted to the Montreal Neurological Institute in 1949. Her birth and development to the age of fifteen months were said to have been normal. She was walking well and had learned to say a number of words. She then had a febrile episode associated with convulsions and the development of a right hemiparesis. She learned to walk again at eighteen months and began to talk at nineteen months.

She developed focal cerebral seizures beginning with movement of the right hand. Her seizures were not controlled with medication.

Examination at the time of admission to the hospital showed evidence of smallness of the left hemicranium and smallness of the right side of the body. There was a mild right hemiparesis. She communicated verbally quite adequately with her mother but was not able to communicate with strangers. After I had spent numerous hours with this child I was able to understand almost everything she said. She had her own sounds for each letter of the alphabet, some of which approached the normal sounds and others seemed totally unrelated. She also had her own words for objects which might or might not resemble the correct word; however, she was amazingly consistent in these sounds.

X-rays of her skull showed smallness of the left hemicranium and marked dilatation of the left lateral ventricle especially in the parietal region. Her electroencephalogram showed spike discharges over the left side principally in the parietal region. At operation there was diffuse atrophy of the left hemisphere most marked in the parietal lobe and most of this lobe was removed.

There was no change in her speech following surgery. During the day after surgery she got her hand under the dressing and contaminated the wound which ultimately necessitated the removal of the bone flap.

When she returned home she discovered that by hitting the decompression she could produce paralysis of the right side of her body. Her mother had a helmet fitted but despite this she found ways to continue beating her brains and finally produced a complete and permanent right hemiplegia.

She was re-admitted to the hospital twenty-two months later with continuing seizures. Her speech at this time was much improved so that although she had definite dysarthria the sounds approached those of normal and she could be understood by strangers. She had just begun to learn to write and there were many reversals of letters. Repeat electroencephalograms showed more spiking particularly in the left temporal and occipital regions. At the time of the second operation the entire posterior half of the hemisphere as well as the inferior frontal region, including Broca's area, was excised. Again her speech did not change following surgery.

She returned home and continued to have seizures. She was re-admitted two years later. At this time her speech was better and she wrote without reversal of letters. Her electroencephalogram now showed spiking in the left frontal region as well as in the right hemisphere. She was discharged home where she died a year later. The pathology in this case was that of chronic progressive encephalitis.

This case has always fascinated me. The fact that this young girl could learn many things despite the progressive nature of her brain lesion is most interesting. She learned to speak, to read, and to write. I assume that this was with use of the right cerebral hemisphere. Incidentally, I do not know if Jim Olds and others interested in self-stimulation of the brain in animals are aware that it has occurred in man as well.

THE SECOND CASE had a history typical of many with temporal lobe seizures. Her birth was traumatic with marked difficulty in breathing following birth. There was also difficulty in feeding initially. At the age of six months she began to have seizures. The seizures continued despite the use of various anticonvulsive medications. Her smaller attacks consisted of an aura of dizziness followed by automatic behavior. She also had major convulsive seizures.

At the time of admission to the hospital she was sixteen years of age. Neurological examination was within normal limits. X-rays of her skull showed smallness of the left middle fossa. Pneumoencephalogram showed dilatation of the left temporal horn. Electroencephalogram showed spiked discharges in the left temporal region.

At operation her aura of dizziness was reproduced. The anterior five centimeters of the temporal lobe, including the uncus and amygdala, was removed.

Following operation she had a transient, profound dysphasia. This is the type of birth injury patient we see so frequently in the temporal lobe group. The damage involves the inferior mesial surface of the temporal lobe. Despite the injury speech is still subserved by the left hemisphere.

THE NEXT CASE is a boy of eleven who also had a birth injury and seizures beginning at the age of six months. The seizures began with twitching of the right side of the mouth. At operation there was a definite scar in the precentral and postcentral face area. This entire area was excised. There was no immediate difficulty in speech including pronunciation. Two days later, with the occurrence of cerebral swelling, he developed profound dysphasia with dysarthria. After a period of about four weeks this cleared completely. It is believed that the central face area is the origin, as far as we know, of cortical pathways to the brain stem which control movements of the lips, tongue, larynx, and so on. Nonetheless this boy had no immediate difficulty in pronunciation. Yet later he developed severe dysarthria and dysphasia. It seems likely that there was some displacement of function due to the original lesion. The left hemisphere is dominant for speech as shown by the transient dysphasia.

THE LAST CASE is a boy of sixteen who also had a birth injury. He had a severe right hemiplegia as a result of this injury and was left-handed. His seizures began with a visual phenomenon of bright lights in the right visual field.

His electroencephalogram showed spiked discharges in the left occipital region. X-rays of the skull showed smallness of the left hemicranium. The pneumoencephalogram showed dilatation of the left lateral ventricle. At operation a left occipital lobectomy was performed.

Immediately after surgery he had no difficulty in speech. He developed, however, a profound aphasia which in my opinion means that the left cerebral hemisphere was still subserving speech. His aphasia cleared and he is doing extremely well without the recurrence of seizures.

I would like to add a word of caution to what Dr. Masland has said. There may be a right hemiplegia with extensive destruction of the left cerebral hemisphere and yet this hemisphere still may subserve speech.

DR. MASLAND: The question has to do with whether an indivdiual's intellectual performance can be improved by the complete removal of an area of malfunctioning brain tissue.

My personal experience, and that reported in the literature, indicates that under certain circumstances very gross removals of brain tissue may produce far less disorder of language functions than is produced under other circumstances by apparently trivial injuries or malfunctions. I refer specifically to observations of patients whose entire left cerebral hemisphere has been surgically removed for the relief of intractable seizures. All of these patients had suffered severe damage to the brain in infancy, had experienced transitory aphasia, but had recovered the language function. The subsequent removal of the damaged left hemisphere causes no readily observable impairment of speech. From this we know that a single intact hemisphere, either right or left, is capable of subserving a grossly normal language function.

This still does not answer Dr. Karlin's specific question as to whether an individual with a defective left hemisphere operating would be improved by its removal. The evidence presented by Dr. Samuel Orton a number of years ago suggests that some forms of language dysfunction appear when there is a condition of "mixed dominance." Possibly under these circumstances there is impaired activity of the normally dominant hemisphere. It is postulated that the continuing but impaired activity of this hemisphere prevents the development of a normal language function in the unimpaired non-dominant side, and leads to a more serious disturbance of function than is noted when the dominant hemisphere is completely "inactivated" by illness or surgical removal.

Dr. Roberts: The statement referred to me was one in which there had been a birth injury resulting in extensive damage to the left hemisphere, at least to the extent that there was a complete right hemiplegia, and in addition enough damage in the occipital region to result in uncontrollable focal seizures.

Now I simply pointed this out in reference to the hemispherectomy, that — although at the time of examination (including X-ray studies) there was evidence of the smallness of this entire left hemisphere, evidence of a large ventricle and electroencephalographic discharge involving primarily the left occipital region — following removal of the occipital lobe and adjacent part of the temporal lobe he developed a profound aphasia. This, in my mind, indicates that this hemisphere was still subserving speech.

Although I, too, have seen numerous cases, some twenty odd, of left hemispherectomy with no difficulty in speech from the standpoint that Dr. Masland is talking about, I am not sure definitely from the standpoint Dr. Eisenson is talking about, i.e., on a higher level. This is a word of caution in regard to this particular procedure of hemispherectomy.

Dr. Karlin: I am familiar with the point of view that the left hemisphere could be removed. I think a South African neurosurgeon who removed the left hemisphere found no disturbance in language development of the child.

Per Cent of Children in Whom Handedness
Is Established in Relation to I.Q.

I.Q. RANGE	CHRONOLOGICAL AGE	MENTAL AGE	PER CENT
15–25	3 yr. 9 mo. to 14 yr. 0 mo.	0 yr. 6 mo. to 3 yr. 9 mo.	56%
26–50	3 yr. 0 mo. to 13 yr. 7 mo.	1 yr. 3 mo. to 6 yr. 0 mo.	65%
51–70	3 yr. 9 mo. to 14 yr. 1 mo.	1 yr. 8 mo. to 7 yr. 11 mo.	92%

The results of this study indicate that a positive correlation exists between the degree of brain development and the development of language and handedness.

In the treatment of a child with a language disability it is advisable to investigate the child's preferred handedness and to encourage the use of that hand.

Childhood Aphasia in Relation to Aphasia in Adults

Dr. Birch, Dr. Dekaban, Dr. Bender

Discussion of the difference between childhood aphasia and aphasia in adulthood could not avoid mention of certain aspects of etiology (even though previously discussed), since many important differences between the two types of aphasia are the differences in causation. Certain of these differences are discussed here by Dr. Birch and Dr. Dekaban. Consistent with her earlier reported position that childhood aphasia and childhood schizophrenia are virtually identical, Dr. Bender maintained that adult and childhood types of aphasia are of fundamentally different genera; and that calling them both "aphasias" has confused, rather than clarified, the problem.

DR. BIRCH: I would like to choose two problems and perhaps provoke some discussion with reference to them:

The first of these problems has to do with the question of the difference between developmental aberration as contrasted with the problem of loss of already attained functions. I think that we have a growing but scattered body of evidence which indicates, as Dr. Masland has hinted in his phase of the discussion, that there may be a fundamental difference in the consequence of the neurological damage in accordance with the time and developmental history of the organism when such damage is sustained.

Thus, for example, we found that children with congenital lesions, which in their locus might resemble lesions which adults have sustained in later maturity, function in a general conceptual and psychological sense in quite different forms of impairment from those which are characteristic of the adult, who at one time presumably had developed these functional capacities and then had been neurologically injured and presumably lost the capacities once acquired.

All of these problems, it seems to me, impinge upon the developing child; and as they impinge upon the developing child the development of language must be a function of his capacity to develop self-signaling and representative function, to develop social interrelations and to learn to anticipate social response on the part of other organisms.

So we have the problem of what sort of mechanisms may be interfered with at many different levels that will prevent the development of such a sequence. In the adult aphasic, on the contrary, we are confronted with an individual who has developed all of these sequences and is now confronted in his inacapcity to engage in one or another aspect of many. This results in marked disturbances in his relation to himself and his own inadequacy of functioning, as any of us know who have been able to observe aphasics.

The second problem is this: I am struck with the beauty and meticulousness of the anatomic and physiologic side, and I am horrified by the lack of meticulousness in behavior to apply these anatomic and physiological functions and how they are related. When a man has a disturbance in his counting sequence, I do not know whether this represents an ability to proceed sequentially in a thinking process, whether he has had interference with self-signaling where the prior statement of number now interferes with the subsequent statement of number and he responds generally to the task. In a sense I would like to hold a brief for the notion that aphasia is a product; and, if it is a product, to analyze the relation of a product to an underlying system is an impossibility.

What we have to do is fill in this intervening kind of step that Dr. Pribram and others have referred to, namely the definition of the behavioral capacities, the essential functions in a behavioral sense, whether they may be called attention or representation or the capacity to generalize with respect to stimulation, or whatever you have between the product aphasia and the geography brain. We must do this before we can develop a functional notion which will give us not merely the geography but the commerce or transactions which may occur between them.

Dr. Dekaban: We must be fully aware of the fact that the pathophysiology of any language disturbance in a young child is grossly different from that which operates in adults who had normal speech prior to the particular illness.

There are many factors which are responsible for this difference. During the most active stage of development of language in the first few years of life an abnormality in only one component of communication may preclude formation of other necessary facets of the speech. Thus, there will be a defect or lack of development of expressive parts of speech if either perception or formulation of concepts is at fault.

Adults with previously normal speech will suffer lesser global deficit following interruption of one major component of speech than young children. On the other hand, the growing, immature brain shows a greater degree of plasticity. That is to say, a lesion involving a definite strategic portion of the brain may cause irreparable disruption of language in a mature patient, whereas a comparable lesion in an infant may be satisfactorily compensated for by adjacent parts of the same hemisphere by the corresponding structures of the nondominant hemisphere, or even by both.

A starting progress in science can be occasionally produced by consideration of a particular problem on the lofty hills of philosophy. Perhaps this happens once in a century. Most of the progress, however, is made stepwise. If we are really interested in the progress in the field of speech disturbances in children, we may have to come down to earth, work with the actual material, and scrutinize the objectives with great care.

I would like to propose that greater efforts be directed in determining and analyzing various components which partake in the normal development of language in young children. Secondly, I would like to propose that every effort be made to develop more comprehensive classification of language disturbances and the methods of diagnosis. Of particular importance would be the direct methods so we would not be entirely dependent on the less revealing methods of diagnosis by exclusion.

Dr. Bender: I would like to make a rather challenging statement which is contrary to what some of the others have said so far:

Using our experience in adult aphasia to help in children, has actually hindered our understanding of developmental aphasia.

We would do very much better if we could get some young people, who are not handicapped by the knowledge which they have acquired of adult aphasics, to go into the study of the developmental language problems in children. I would then suspect what we learn from children would be far more useful in our understanding of adults.

Therapy and Education for Aphasic Children

Dr. Bakwin, Miss McGinnis, Miss Haeussermann,
Dr. Huber, Dr. Hardy, Dr. Bender,
Dr. Doll, Miss Tannhauser, Dr. Cain, Dr. Karlin

One of the sharpest differences of opinion expressed during the conference concerned the effectiveness of therapy (structured habilitation) for childhood aphasics. This difference is illustrated by the exchange between Dr. Bakwin and Miss McGinnis. Dr. Bakwin spoke from a background of a medical school professorship in clinical pediatrics; Miss McGinnis reflected her experience as a clinical teacher in a school for speech-defective children.

While most of the conferees did not take categorical positions on this issue, they appeared to give support by implication to the thesis that speech therapy would usually be efficacious in improving the linguistic communication of the aphasic child if he was otherwise normal. Also discussed were the rationales of therapy or habilitation of the aphasic child.

Dr. Bakwin: What about these children with retarded development of speech, and we are talking about children under three or three and one-half?

Does any sort of educational therapy to the child help these children to talk more quickly? I am not talking about the parent explaining to them. Does it improve their speech later on when they start to talk? Does it have any beneficial value?

You may say, "What is the harm in treating?" This I don't like. "What is the harm in using a little too much of certain things?" We have found that harm *can* be done.

The pediatrician by and large deals in the most part with normal children or children mildly ill. They tend to get well. This was nicely expressed on a tombstone in a cemetery just outside of London. It was a tombstone for a baby who had died when he was only a few weeks old. It said, "If I was so soon to be done for, why was I begun for?"

This is the attitude of the pediatrician. If the child has begun, presumably he has begun to develop in normal fashion.

The question I want to pose is this: has it been demonstrated that young children, three and three and one-half, who cannot speak, are in any way benefited by therapy?

Miss McGinnis: I think that Dr. Bakwin asked if the young child could benefit by some therapy. If therapy of any type used in nursery schools or elsewhere has not brought about onset of speech and language by the time the child is four years old, then formal teaching for communication skills should be begun and this formal teaching will help.

Miss Haeussermann: If we find a good educational management and if we can reach the child early, if the child can be brought to us early and identified early, we can guide the parents early and we can help the parents avoid many of the mistakes they make nowadays.

We have little aphasic children who have grown to be afraid to look at faces, because their parents' faces have become more and more tense and desperate as they have spoken to the child . . . noises have come out of the parents' mouths which to the child who cannot interpret words, do not mean anything . . . the voice has become louder and louder, the face has become more and more tense . . . and the child wanders away. You think you have an autistic child; in reality, you have an aphasic child who has been misunderstood by his parents, who have tried terribly hard to have the child speak.

These things perhaps can be avoided if we can identify the communication difficulty of the child early.

Dr. Huber: There is a definite slowing down of the comprehension in children as well as in adults in terms of language. We have to slow down the aphasic stimulation and simplify the stimulation, and in some instances certainly to amplify the stimulation in order to obtain the type of learning that we want. Some of them have difficulty when the stimulation comes too fast and is too complex for them.

I think sometimes we can make the comparison that putting information into these individuals is much the same as comparing the normal with the dysphasic. We might have two "buckets." The first "bucket" might be a normal individual, and if we fill it full it stays relatively full. But if we try to put information into the other "bucket," it appears to be full of leaks.

This language difficulty is predominantly a memory deficit in verbal learning. In some way in our training we must learn how to plug these holes in the "bucket."

It has been my experience that probably the best way is through conditioning, that speech is learned through conditioning. We must just apply this conditioning with greater intensity and apply again these principles of simplicity: slowing down the rate, amplifying the stimulation and reducing the complexity.

Dr. West once said that children would probably learn speech at an earlier age if adults didn't talk so fast and with such great complexity. If we talked to the children on the level of their vocabulary and at the rate at which they could absorb it, then perhaps they would learn it faster and retain it longer.

Dr. Hardy: There are various allied and competing disorders or attributes which may be part of a general clinical picture. Several of these have already been referred to, directly or by implication: distractibility, perseveration, hyperactivity, peculiarities of attention, sensory-motor distortion, or disorganization of the sort that suggests a classical apraxia. Any or all may be descriptive of the child who, in terms of communication, is aphasic.

The applicable dynamics of the brain have been given many labels. An obvious *caveat* is that the diagnostic label not be confused with the child. Any or all of these descriptions may be directly related to the status of a basic disorder of language learning, memory, and recall. Their effects can be far-reaching and confounding in terms of emotional and social adjustment and maturity.

There are many particular problems regarding the needs of any particular child, but it is reasonable to anticipate the possibility of suitable program for every child. The design would be based on the most careful differentiation of his CNS functions and would be subject to periodic review in terms of the child's achievement.

Dr. Bender: By and large, it has been said that the prognostic situation for aphasic children is pretty bad. I would say that the situation is just the opposite. The younger and earlier we can catch our children who are not talking, the quicker we can evaluate our diagnostic problems, and the more we can find ways of stimulating maturation, which can be done by environmental factors or by internal biological factors, the better our prognosis is going to be. At the present the prognosis is remarkably good. I have known children who were not speaking at the age of three, who are now college graduates.

My feeling is we shouldn't put children into schools and classrooms and clinics by the diagnosis, but by their functioning capacity and their need for treatment, education or programming at that particular stage. And we should always be prepared to change the program the next year.

Dr. Doll: The psychologist and the educator have less experience in this area than do those who are specially prepared in the field of speech and hearing. Whenever direct consultation is possible with such specialists, referral should be made. But when such personnel are not available, and the psychologist or educator is dependent on his own resources, he simply does the best he can, guided, of course, by some general knowledge in other fields but aware of his limitations and proceeding with due caution.

Such a person should be alert to the peripheral sensory manifestations of language disorder and to the developmental stages of language acquisition and use. The educator will recognize that hearing is generally more significant than vision in the acquisition of reading because reading is a specific facet of language use, and language originates through aural perception.

He would also be aware that emotional immaturity and the psychodynamic experiences and disorders of childhood also pose certain problems by the time the child has reached school age. Similarly the psychologist would look for specific experiences which may have interfered with the language acquisition or which may have imposed restrictions on language use.

The psychologist would further understand that language facility is related to native endowment as well as to social status and to ethnic, racial, and nationality affiliations. He would assess the stimulating or deprivative aspects of environment and culture and the intellectual components of language as related to various degrees and types of mental retardation. He would want to measure language performance, and would be oriented to the phylogenetic role of language in the oral progress of civilization as well as in the ontogenetic life history of the individual.

The psychologist might not be competently informed regarding the abnormal aspects of language as influenced by pathogenic circumstances. He might not be intimately familiar with the problems of peripheral sensory loss. Or, he might not be familiar with the psychoneurological theories of linguistic prerequisites.

He might not be familiar with the more intricate psychodynamic disorders. In short, he might not be familiar with much more than the content of such a volume as Myklebust's work on language disorders in children.

He might be informed, however, on the personality ramifications of language expression and on speech habits, conversation, educational facilitation, and the like. He would plead the need for more adequate scales of language measurement. He would in the meantime employ such meager information as is presently available on the maturational aspects of the acquisition of vocabulary, the parts of speech, the development of syntax, and their ultimate capitalization in reading, writing, and the various scholastic arts.

The psychologist certainly would endeavor to segregate intelligence from language use and vice versa. This is no easy task in view of the intricate correlation between intelligence and language.

Most of our concepts of intelligence are couched in linguistic contexts, and most intelligence tests require both receptive and expressive use of language. Most so-called nonverbal and performance tests are not so independent of language as we naively assume. The search for mental tests which are independent of language has met with only dubious success. Nor is it easy to infer how much subvocal language and language experience influence a nonvocal performance test.

Not all of us are intimately versed in the subtle details of the psychodynamic aspects of behavior which influence or are expressed through language performances or behavior. Yet we need to distinguish between language facility which conveys little content and the lack of such facility for conveying sound ideas.

The clinical child psychologist is presumably familiar with such categories of language expression as mongolism, cerebral palsy, and neurophrenia. He would also be familiar with autistic language control and with the unstructured versus structured manifestations. He would recognize the negativistic personality and cultural conditions.

He would have heard that some children are enjoined to be seen and not heard. But he would be particularly concerned with language measurement as an ad hoc appraisal of communicative behavior without immediate regard for its causal components or overlay.

He would be sensitive to vocabulary, syntax, and grammar. He would observe the child's qualitative nuances as well as the quantitative range of aptitude. He would, for example, know that the word "big" is less difficult than the word "large" and is acquired earlier. He would not expect some children to point out the "bigger" of two blocks; they might do so if asked to indicate the "biggest" or simply the "big one." Indeed, he might find the child is simply indicating the larger block without regard to the qualifying adjective. In short, this examiner watches his own vocabulary as well as the child's and the forms of speech as well as their content. As noted before, he would discriminate between motivation versus ability in language use, or between can, does or should.

Miss Tannhauser: We are interested in diagnostic information from all persons who are professionally prepared to add something to our total knowledge of the youngster. When we receive this information, we must then attempt to draw up an educational hypothesis. The educational hypothesis is our attempt to translate diagnostic data into usable terms for teachers.

We have experimented with giving teachers the full case record on a child with all of the medical records and so on. Some teachers can profit from this kind of information. Many teachers grow in their competency to use this information successfully. But in the meantime we have found it has been extremely helpful and absolutely necessary to make an attempt to draw up an educational hypothesis for the teacher. This is done cooperatively with the various disciplines involved. We find that in the process of helping us to draw up the educational hypothesis, the various disciplines become more fluent in the kind of descriptive terms which are useful to us in deciding what a child needs, how he should be placed educationally, and what techniques should be chosen for him.

In addition to the drawing up of this educational hypothesis, we find it is very helpful to have the teacher make an appraisal of the child. After explaining the information to the teacher, the teacher is allowed to spend a full day with the child so that she may assess the child in the light of our hypothesis. In the light of her concepts and understanding of what the diagnostic data has said, she measures the function of the child in terms of specific classroom procedure, determining the level of each child before the child becomes a member of the group.

The teacher also has an opportunity to hear the mother's story of the child's total growth and development: everything that the mother can remember, what the child enjoys, things that the mother has been concerned about, the story of the child's development.

After the teacher has had this full day with the youngster and a conference with the parents, she draws up a plan or procedure for the child. The child then comes back to her for another full day in which she patterns toward the procedure which she expects to follow.

This we consider a conditioning step. For instance, when our young children come in, many of them have never responded to language. Many of them are very astute in responding to facial expressions and very capable of being the winner in any situation.

So, in this conditioning step, one of the first things that we teach the children is to stop. This is done by taking the child by his hand in a playful mood, and saying "run, run, run" in soft tones and then very loudly we say "stop," and we stop physically. We do this over and over so that without the running and without the movement when we say "stop," we get immediate action. This may seem trivial but it is terribly important to us because these children are in a public school which has a wooded area adjoining it and which has hundreds of other children on its playgrounds. It is terribly important that the teacher know where the four-year-olds are, and this can change by the minute unless they respond to "stop."

We also condition them to respond to "come." This is done with a friendly outstretched hand to bring the child forward, and when he comes he has a chance to do something which he enjoys.

The teacher thus conditions school behavior and response with the child who cannot rely on communication. She also conditions him to a particular routine. We feel that children who lack a pattern of activity or a pattern for thinking need to have this conditioning superimposed. When the child first comes to school a particular pattern is set. The teacher practices this pattern with him over and over the first day. Later, when he comes into the classroom to join the group he knows where he puts his coat, and he puts his coat there; and then he goes to where he is to sit, and there he sits.

This is just a beginning. There are other parts of the pattern which are not relevant here. But this business of patterning, I think, is very important. This is done before the children start school. When six or seven children have been added to the class the pattern has been established.

We draw up this pattern of learning in terms of the way we handle our activities, our environment. We also draw up this pattern in terms of the way in which we handle the technique.

I think that the instructional program should be one which provides a definite and definitive pattern of development, one which gives the child the kinds of simple clues which make it possible for him to know what is indicated and how to do what is expected of him.

Dr. Doll mentioned that he felt systematic learning was important in the language development. It is perfectly possible to be systematic in the wrong way. He did not imply what he thought the right way is or what the right way should be. I would doubt if Dr. Doll, as a phychologist, would recommend a pattern quite as teacher-dominated as we propose.

When we started working with aphasic children, we started with the technique which was known to the teacher whom we could hire. When another person became available who had been schooled in other techniques of instruction, we tried them. We tried matching children in different settings and employing teachers who professed to be skilled in different techniques. We gave them the freedom and the right to work the way they wanted to. This is the way we began to make our appraisal of instruction.

The system of instruction which Miss McGinnis uses, which she did not delineate for us this morning, at this point works better than any other system we have tried with the children who have no understanding of language and no use of language.

If a person should come to my office tomorrow who was skilled in another system, I would employ that person and try that system. As I tried that system, I would try to evaluate whether or not the children who profited from that system were just like the children who profited from another system, or whether these children were different. Experimentally, then, I would be attempting to find the system which fits the child.

In doing this, I feel that it is important that we keep case records of the children and details of the instructional program which they have received and that we evaluate the children as they received these various patterns of instruction to determine what system or what methods are most effective for what constellation of difficulties in children.

For our instructional program, our children are grouped according to the severity of their difficulty and the nature of the instruction which we feel is required.

Basically, the systems, I think, vary in terms of whether or not you provide the motivation for learning — the concepts to be expressed and the repetition of the words which express the concepts, on the one hand, or if you break down the word form into the simplest elements and provide a structured way in which to rebuild this element into usable vocabulary.

I feel that the management of the children includes parent study groups. We have parents working together with us studying the best ways of management and attempting to understand and share what we are learning and what we are doing.

We believe also that in the management of the children we must continue this cooperative work with the various disciplines involved. It is one thing for a psychologist to describe a child whom he has seen in his office, and it is another thing for the psychologist to describe what he sees happening when the child is working with the teacher. We would like for the psychologist and the medical people to work with us in our setting to help us understand behavior and question as we see it in the classroom.

Then, I think (in terms of the management of the aphasic child or any other child) that we, as educators, must participate actively in educational research. We must let other disciplines know how their suggestions work out when we apply them in our schools.

Dr. Cain: I think we all know that we have had previous experience in terms of dealing with children with handicaps in educational settings. Many of our states and many of our communities have programs. We generally call them special education in which we have had the teacher as the nucleus and in which we have the services of psychologists, speech therapists, medical consultants, and others.

If they are going to say that the most logical place to put this program is somewhere in the schools, then we are really confronted with the problem of what personnel we are going to use and how this personnel is going to function within this setting.

For example, what is to be the role of the teacher if a teacher is to be within this program? Does this teacher need some special professional education in order to prepare her to do this particular job? Or can we take a teacher and have her consult with the psychologist and speech therapist and others and do the job effectively?

This really, talking from our own point of view, is one of the problems we are looking at now. What should we do about this? Is there something we can do in the teacher training program to help a teacher to make a program like this more effective? I do not think this is the only problem.

We talk a lot about the team approach. We have made progress in the use of teach approach but it is piecemeal, bringing in segments of information team members have collected in case histories. But the people who write them often do not see or communicate in terms of the actual subject or children involved and how they develop so that a good evaluation can be made of the child.

Dr. Karlin: I have discussed this problem of treatment of aphasia, which is the most important thing in my mind, with people who are actually involved in the treatment of aphasic children. I have also visited and observed the work done in some of the special classes which they have in New York for aphasic children. I also attended the Cleveland Conference and had the pleasure to talk to Dr. Kleffner.

It appears to me that basically there are two different approaches to the treatment or teaching of aphasic children.

There is one approach they call the analytical approach, where they start with a sound just to give the child the feeling of how to make a sound. Then they go into nonsense words and then phrases.

The other group of people with whom I have talked don't believe in this type of an approach. They start immediately with a word and let the child develop the concept of the word. The child should know what the word stands for. They don't believe in starting with a sound and then nonsense words and then the phrase itself. They believe they should start with the word, give him the concept of the word, and then go on from there to phrases and sentences, and so forth.

The Role of Parents in Diagnosis and Services for the Aphasic Child

Mrs. Herrick, Dr. Wortis, Dr. Lowell, Dr. Birch

The role of parent organizations in bringing into existence special education and service programs for other categories of handicapped children indicates the positive role they may play in the field of services for aphasic children . . . Parent reaction to various diagnoses . . . Psychotherapy for the parent is no substitute for services for the child . . . The need for increased understanding and communication between parents (and family) and the professions responsible for diagnosis, treatment and the planning of services for the aphasic child.

Mrs. Herrick: I know that during the development of community educational programs for retarded youngsters there was much anxiety on the part of educators about having any contact with the parents' groups. It wasn't until real pressure was brought to bear that there was communication among the community services, the parents, and the schools.

I think this is the sort of thing that might easily be something for us to consider in relation to the development of programs for aphasic youngsters.

We might look at this also from the standpoint of one of the most serious problems that exist. How are we going to carry on study and research in the development of services — the recruitment and training of personnel in the various kinds of things we even here today have talked about as being necessary in this field?

This again is a place where an organized group of parents who are working *with* and not *against* us in the development of services for aphasic youngsters may be a real source of help.

Actually, in our relationship they assume a number of different roles. They are the source of the youngsters with whom we are concerned. They are the people who are continually pushing for treatment and training for the youngsters. And they also can be a strong arm in relation to the support of some of the economic and legislative things that need to be done to get such programs under way.

In the beginning we were talking about how much more accurate our diagnosis of these youngsters could be if we waited until studies were completed. When everything was pretty clear and everything had fallen into focus, then we could bring the full weight of our professional skills to bear in a way that would be appropriately definitive.

If we look at this from the standpoint of the parent living at home with the child over those years, this is a period of increasing anxiety and frustration both for the parent and the child. Much anxiety is created in this early period before some kind of beginning service has been available.

We have discussed the possibility that many problems may be ascribed to certain sources of emotional disturbance. I am not sure that a lag in the provision of service may not create this emotional overlay in the problem that the child and the parent both have.

As we look at this, it says something to us about where we have to put some stress even though we are not ready and it may not be convenient because we do not yet have a well-rounded and orderly program. We could if we waited until this reached a certain stage of ripeness. Waiting for this stage of ripeness may well create, from the standpoint of the parent, an unbearable burden.

This speaks of our need to again assess the whole child not only in point of the particular period when he comes to us but in his entire life situation. Our problems that are related to the question of overlapping diagnosis would be so wonderfully simplified if the community could separate the mentally retarded from the epileptic and have them neatly catalogued in different pigeonholes. It would avoid many of the problems we have in trying to decide whether it is more this or more that.

What is going to have priority in the diagnosis and planning? A friend of mine once made the comment in relation to the educational testing of a child who was diagnosed as educable, that this diagnosis could not be actually proved out by looking at the child if you diagnosed only the child and did not look at the community, and that the child was not effectively educable unless there was an educational program to offer him.

I think in a sense this is the thing we are faced with in relation to aphasic children. No matter how sharply his problem is diagnosed, unless this leads to implementation in the form of some kind of program or service, the diagnosis from the standpoint of the child or the parent is not a very therapeutic device.

I am perhaps a little more aware of this because years ago we had parents of retarded children come to us for assistance, and we would often send them to a service where the child could be diagnosed with the feeling that determining the IQ would solve the problem. If it didn't seem to solve all the problems (and it usually didn't), we could send them in for re-evaluation in six months! Without any real therapeutic aid available, diagnosis was essentially futile. It clarified the services for which he was *not* eligible but gave no help.

From an educational standpoint, we need to depend on our being actually able to work with the warm, live bodies of the children. Some of this cannot be determined without the actual pragmatic approach of trial and error to see what is most effective with the youngsters of a variety of disabilities.

We also need to have a look at how we can make the amount of professional skill, knowledge, and services that we have now meet the needs of as wide a group of youngsters as we can possibly reach.

When programs first started for retarded youngsters in the community, we tried to get various social agencies to offer some counseling service to the parents. We found they were reluctant to do it in the beginning. I was annoyed because it seemed to me the parents obviously needed help.

As we began to explore it a little further, it was apparent that one of the real problems we were facing was that reassurance and sympathy and comfort are not very helpful to the parent *in absence of services for the child.* It doesn't seem to produce much in the way of real help to the parents.

So, this is something we need to think about from the standpoint of how we should go about parent education problems. How do we do parent counseling? How do we bring parents along in the process of developing the services, education, and so on, we may offer the child?

Certainly the prognosis on the child is very much a part of the way in which we relate to the parent in our counseling situation. This is sometimes rather difficult to do because we are set up on such a segmented basis so far as age problems of children are concerned that we don't have the longitudinal study that gives us the knowledge of what is going to come after. We sometimes feel a little annoyed and irritated with parents who want to know what is going to happen when the child is twenty-one because we have done the best possible job for a two-year-old who is about to be three.

Certainly the long-range problem that these youngsters may have has a lot of bearing on the real problem that the parent may have to face. We have to realize that a parent whose youngster has as his eventual prognosis for adulthood some degree of dependency is very different from the parent whose child is going to be able to achieve independence.

We have found ourselves to be a little uneasy with parents. We are rather inclined to think it would be better to have the child turned over to us to educate and when the child is eighteen we can hand him back to the parent and then the parent can take over from there.

In point of fact, unless the parent has been "on board" during this whole process, he will have great difficulty in having the kind of matrix in which the child can make maximum use of the services we have given him.

Obviously, the integration of a child who has special learning difficulties is a very real problem and requires even more that we work closely in our relationship with the parents.

In view of the fact that we do have a diagnosis that obviously overlaps other areas of disabilities, a most crucial question is not of "differential diagnosis" from the parent standpoint but "preferential diagnosis." The parents often seek a diagnosis that has for them increased status. This is a problem that inevitably is going to come up in this field.

We are all having to face up, as we often don't have to do, to the ill effects of having somehow or other let the more unpleasant fact — that he was mentally retarded — be overridden and allowing this child to be placed in a setting of the "preferential diagnosis." The implications for this family for now and the future are tremendous. This mother has suffered severe shock at having to face up to the correct diagnosis — fifteen years too late to enroll her son in the appropriate class for the mentally retarded.

I think this has real significance in our work with the multiply-handicapped child.

Dr. Wortis: I think in the present state of social arrangements for the handicapped, there is a great deal to be desired and a good deal to plan and hope for. When we talk of what these children need on a community level, it is hard to avoid platitudes but platitudes are often true.

From the parents' point of view, those parents who make themselves vocal on these issues, what their aphasic children need, are basically three things: (1) They need a diagnosis and need it as soon as possible. They need an evaluation; they need access to places that can give them this evaluation. (2) They need special help which inevitably is bound to be largely special educational help. And finally (3) they need some place in the community as they mature where they can lead reasonably normal lives. I think the main emphasis needs to be on some appropriate vocational placement.

These I would say are the three basic needs of the families and the children alike.

When we ask how these needs are now being met, we must acknowledge they are being met in a very unsatisfactory, piecemeal, confused, and inefficient fashion.

In a clinic such as the one I am associated with, which has what seems to some people as an ample budget of over one hundred thousand dollars a year, we find an awful lot of time, money, and personnel wasted in shopping around, doing patch work, mending situations, or laying plans that have little likelihood of being accomplished. We have often wished for the day when some coordinated effort will arise in the community for the care of the handicapped.

Some states are already beginning to set up state-wide commissions for the problem of aphasic and other handicapped children that community after community will need to think in terms of coordinated effort and comprehensive community planning.

The parents, as Mrs. Herrick recognized, are not only disappointed but frequently angered by the ministrations of clinics, social agencies, and psychiatrists who seek to persuade them that their problem is internal and self-serving when they know that their problem is very real; in the absence of adequate community services the best of psychotherapy will falter, so that the emphasis has to be on concrete community arrangements and real services.

I think we owe to the parents, particularly the organized groups of parents, the development of increased services in this whole area. We are all utterly convinced that the boom in the retardation field would never have developed if parents hadn't met first in New York and later throughout the country and organized their powerful pressure groups. (They are often called "pressure groups" if they press for something that we don't like. They are called "organized citizens," "channels of expression," and so on, if they do something that we like.)

I, for one, am grateful that the parents in the San Francisco area have taken some initiative in organizing and pressing their legitimate claims for services for their children. I would like to see developments follow more or less the course of developments in the retarded field, and I think there are good, strategic reasons why these developments can be imitated.

A lot of emphasis was placed by the parents in the early days of the retardation movement on the development of clinics. It is true that clinics can't solve the whole problem. But they can begin to solve the problem, and have served as focal points of interest in the subject. They have helped to cultivate a better scientific level of work, they have trained personnel, they have promoted research.

I look forward to the time when no special clinics for the retarded will be necessary, when pediatric clinics, psychiatric clinics, neurological clinics, and rehabilitation clinics will be doing this sort of work as a matter of course. But as a strategem for development, the specialized clinic has served a useful purpose and still has a useful function to perform.

I would call for the development of specialized clinics in language development, or at least task forces placed strategically at some of our medical centers where a concentrated effort can be made to provide services for these children, to develop personnel, and to serve as a spark plug or stimulating influence in the elaboration of other community arrangements.

One of the first things that would develop if children were processed serially through such special clinical services would be that the educational authorities would be very quickly encouraged to develop the special educational facilities needed for these children.

After some initial apprehension on the part of the educational authorities, we now have the finest cooperation developing between us in our clinic. We have in our clinic a liaison representative of the school system to work with us on problems of appropriate class placement. I think similar developments would inevitably follow if we had a good clinic agency evaluating these aphasic children in the proper way and making legitimate demands for special educational help.

When it comes to the problem of special educational placement, I think difficulties can arise where parent groups organize on the basis of misinformation or inappropriately applied information and ask for educational arrangements which don't correspond to the needs of the child or with our present level of knowledge.

In our own city a group of parents of so-called brain-injured children have pressed for special classes for the "brain-injured" in spite of the fact that from an educational point of view there is no such entity, and under the pressure of this parent group special classes have been established which accept only obviously brain-injured children. So, an inept pressure can lead to inept solutions.

But in the case of aphasic children, I think the pressures are legitimate, and I would like, as I am sure all of you would, to see special educational facilities developed for the aphasic child.

I would say that there is an unfortunate tendency among the best of teachers to defer to the judgment of the specialists and experts outside the educational field when it comes to making recommendations for these educational arrangements. I would like to elevate the status of the teacher for two reasons:

First, the knowledge that the teacher in the area of special education has gained over the generations in spite of its unsophisticated form contains a lot of accumulative knowledge and wisdom that the laboratory specialist or medical specialist can afford to learn from and to respond to.

Secondly, I would like to see emerging in the teaching profession some more technical specialists, scientific pedagogues, who will be proud of their assignment as pedagogues, and who could use their opportunities to examine the material they work with and to talk on equal terms with the physicians, the speech pathologists, and the psychologists, and join us in some of our scientific endeavors.

Certainly when it comes to problems of educational placement, I think it is unfortunate when teachers follow the dictates of psychologists who have never worked with these children or psychiatrists who have never spent more than a half hour with them.

I think problems of special educational placement should remain primarily the responsibility of the educators and not of the specialists who refer children to the educators.

I have joined with others in my own area in calling for the abolition of psychological responsibility for educational placement. We are asking instead for the development of screening commissions consisting of a teacher, a physician, and a psychologist who can distribute the children to special educational facilities as the child's needs may seem to require and change such placement when it seems desirable.

The special educational arrangements would necessarily vary from one locality to another depending on the number of special cases requiring attention, but it seems to me we can safely leave that to the local communities to determine.

Finally, in the area of vocational placement, though this deals largely with the adolescent in terms of vocational training and the young adult in terms of placement, it is true and sad that many of the children on whom we spend our best efforts falter and fail and end up in custodial care because when schooling is over there is no place for them to go.

I have often thought and said that if we could do only one thing for our handicapped children, if a fairy godmother would appear before me saying I could have one wish, I would wish for vocational placement for the handicapped. Because when you have a realizable goal and some reasonable perspective for a dignified place for the handicapped as adults in the community, then you galvanize into action a whole train of educational arrangements which can prepare the child for this goal.

Here, too, I think we cannot leave it to the free play of economic forces to see where these handicapped children end up. Just as our handicapped veterans get subsidies to help them in employment because they have done service to their country, I think our handicapped children when they grow up need similar help because they have certainly done no disservice to the country. I think they cannot be allowed to shift for themselves in a competitive economy.

I would like to see more thought given to that problem, and the emergence of perhaps subsidized cooperatives, more sheltered workshops and things of that sort.

In summary I would say the basic need is not only for community services but for *planned* community services, and within this setting I think the family will find a grateful place. The burdens placed on families are often very great and sometimes tragic and disruptive.

In our clinic we like to put primary emphasis on practical help for the real problems that the parents have and only secondary emphasis on the problems of guilt, anxiety, acceptance, and things of that sort, which we feel usually arise out of the real burdens that they are forced to carry.

Certainly parents can join with us in plans for the training of these children. They can cooperate in home instruction if properly directed, and we can help them to provide for their handicapped child as normal a life as is possible, so that the distressing secondary problems that we so often have in the handicapped need not become prominent. In the case of the aphasic child this means that every other channel of communication must be kept open, that the child should have experience in play, in communication — in fact, maximal contacts and all that goes with the normal expectations of a growing child.

Certainly parents as we observe them must learn not to reject or overprotect or fail to stimulate their children and must learn proper tactics for home management, to which I am sure experienced teachers can contribute.

Dr. Lowell: I came into the field as a motivational psychologist. My primary interest is motivation. It happens to be achievement motivation. But I still look at the situation from the standpoint of the underlying motivation.

I have had the experience at this meeting of listening rather than talking, which was a unique experience and was commented upon by some people who know my usual habits.

I am a little concerned about the motivation for this meeting. The letter inviting us stated it had as its purpose a discussion of the problems of diagnosis and a consideration of helping aphasic children as well as their parents.

I understand that what we have said is going to be transcribed and disseminated. I wonder if it is going to go to the parents. I wonder if they will get very much out of what we have said. I am not sure how much information we have to share.

I would like to say that I think this is indicative of the way we so often approach the problem of parents in special education. I am exaggerating a little bit and I will include myself in the group if I say unpleasant things. I think it is reflected in the way the meeting was organized. The parents are scheduled for the last session; if something happens to generate ideas, concepts or information that might be of value to parents, we will have had little opportunity to discuss or clarify them.

Dr. Birch: I think that it is most important to distinguish between the facts of the experience of the individuals and their own limited interpretation, and this includes my own limited interpretation, of why the given fact happens to be effective.

Given this kind of situation, we have parents who are confronted with desperate difficulties. These difficulties in part can be resolved by a fuller understanding on our part of the nature of the problem with which we are dealing by a clearer delineation of the pathogenesis, by a clearer delineation of our methods of therapeutics, and by a more full reporting of our failures in therapeutics rather than a mere reporting of our successes.

Given this kind of situation, it is not at all surprising that parents are desperate. It is not at all surprising that there are coming to be social movements which represent their attempts to facilitate the solution of the problems with which they are concerned.

Again, whether or not we like a given social movement is dependent upon our own theoretic prediction.

Someone indicated his dislike for the term "brain damage" for a number of years, as have I. I think this has led to an extended conception about the undesirability of a given kind of parent organization, which he justifies by saying that there is no such educational entity to which it can be referred. That does not mean that such an educational entity cannot be created. I think it can and has been in the history of educational movements, and this is not a strong argument.

I think we must be responsive to these parent movements. Despite what they may indicate is the essential problem, we must work with them, putting together their experiences and ours, to the point where we may come to formulate a problem which may be effectively worked at in a social and community manner that meets the actual needs of both the professional working with the child and of the child himself.

The one thing we must avoid at all cost is the adherence to what we call the law of constitution. This is the law whereby, when we do not know how to deal with the central problem, we work upon a problem with which we are capable of coping, and so convert our situation into one that reflects our competency rather than one that reflects the disease of the chlid. I think this can perhaps be the most self-deluding and scientifically destructive path, and I hope we can avoid it.

What We Still Must Learn About Childhood Aphasia

Dr. Templin, Miss Haeussermann,
Dr. Doll, Dr. Wepman, Dr. Karlin, Dr. Birch,
Miss McGinnis, Dr. Cain, Dr. Wood

This chapter, by the very nature of its subject, is non-coherent. It consists of suggestions extracted from the speeches of the conferees, as they paused in the discussions of etiology, therapy, and so on, to confess their ignorance of vital aspects of their subjects and to express the hope that future research would dispel some of the ignorance. Though this chapter may appear miscellaneous in organization, it is by no means unimportant in its significance. More suggestions for future research are to be found in the Statements in Summary which follow.

DR. TEMPLIN: Although there are some short-term longitudinal studies of the growth of language, the longitudinal studies on the various areas of language growth in a large number of individual children need to be done. They would aid in identifying specific factors related to language growth and in differentiating children slow in reaching maturity from those not likely to achieve the mature level. This is related to one of the questions brought up this morning – the difference between deterioration and retardation in development. Because the child is still "becoming," it is sometimes difficult to determine whether he is deficient, deteriorated, or developing more slowly. Right now related to this problem we are trying to identify in kindergarten those children who are slow to develop and to differentially diagnose them from children who are deficient and will be atypical when most youngsters have achieved maturity in speech sound articulation a year or two hence.

MISS HAUSSERMANN: I will go back to aphasia, because on the basis of Lewis' book and other studies, in my work at the Jewish Hospital in Brooklyn I have tried lately to see whether it might not be possible to pick up difficulties in communication long before actual speech develops.

I think that within five or ten years we should be able, a group like this, to work out some guideposts to help pediatricians and public health nurses, and perhaps also parents, to spot these things early.

We did it in cerebral palsy. I remember the thrill I had in the work in cerebral palsy when it first dawned on me that in some cases where the child did not have any very severe manifestations of cerebral palsy — but if he used a unilateral approach at the time babies are still supposed to use a bilateral approach, and you examine the non-used hand — you could spot some cerebral palsies as early as four to six months because the child did not respond like a normal child should.

It should be possible in some years to figure out the difference in the communication pattern of the babbling baby, in the way it receives its mother's voice, in the way it responds to its mother and its environment, to perhaps pick up roots of difficulty in communicating going down to the level below one year, below the language level . . . and in that way to avoid the emotional overlay that we find later on in the child who has been misunderstood, who has been an aphasic child but has been thought to be a stubborn child or a retarded child — or who has been pressured to the point where it will take quite a bit of rehabilitation before he can take training.

This is my hope, that the significance of early signs of communication patterns or lack of communication patterns may lead to earlier diagnosis of aphasic disorders.

I think it can be done by those of us who are in the work with individual children and parents in clinics and so on. We can do it by carefully eliciting early developmental data; not by giving some of the leading questions but by just finding out like we do in all other areas: "When did the child do these things?" "Did he do it like other children did it?" "Was there any difference?" "Did you react differently to him?"

This is a project for the future for many of us.

The second big problem which I would like to have you discuss is — with all due respect to Dr. Wood, who says we possibly don't have aphasia — what would be the education and management in the earliest years after diagnosis? I am just on the practical side of this work and I leave all the theories to the people who have studied many, many years and have read books and written books. Whether we call it aphasia or not, I assume if a child does not have communication with the parent, and it is not on the basis of a hearing difficulty, schizophrenia or retardation, or parental rejection, then I assume there may *be* a basis which maybe some people call aphasia, and at this time I will call it lack of communication between the parent and the child.

Dr. Doll: I would like to draw an analogy between the degrees of mental retardation and the degrees of language deficiency.

I think of aphasia as representing various degrees of language deficit all the way from absolute verbal lack to some marginal normal limit of language use. Language retardation approximating aphasia is analogous to mental retardation approximating idiocy. And just as mental deficiency represents clinical *kinds* as well as *degrees* of mental subnormality, so aphasia may be considered a clinical type and also degree of language subnormality.

If we had a scale of language measurement, we could quantify language comprehension versus language expression and ultimately distinguish between the intellectual ability to comprehend and to respond versus the verbal ability to listen and to speak. If we could do this, we could say that this person's comprehension is of such a *degree,* instead of just "good" or "poor." With such a scale we could measure the difference between input and output if we consider these as two phases of the same thing.

Then we could determine cut-off points on such a scale to be considered as *receptive* or *expressive* or *mixed* aphasia. We could also determine whether this is a developmental language deficiency related to mental deficiency, neurological impairment, emotional disturbance, or other things. We could thus determine types and degrees of aphasia just as we have morons, imbeciles, and idiots as types and degrees of mental deficiency.

Dr. Wepman: It seems to me in concluding these remarks that this scale or some such scale is necessary in our thinking about the child with infantile communication problems. I would further like to propose that the development of such a scale* or continuum should be given high priority in validation and reliability research.

Dr. Karlin: Congenital aphasia is still an area where a great deal of investigation is needed. Basic research in brain physiology and language function will undoubtedly shed some needed light on this very complex, provocative, and still unsolved problem. In the meantime he who cares for an aphasic must bring to this problem much thought and stout action, for the dice of the gods are loaded.

Dr. Birch: This seems to me to involve a certain assumption, and this assumption is that we know what cognitive level, what level of perceptual generalization, what level of symbolic organization is necessary for the individual to engage in verbal communication or in general in language.

I, for one, do not know what these capacities are. I think that in making this as an underlying assumption we are hiding from ourselves perhaps the most exciting area of research in the whole region of language function and language development.

I, for one, would like to know what the process of symbolic organization and the development of the cognitive functions are that are prerequisite to the development of the language function.

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* See Dr. Wepman's scale on page 4.

I would like to predict, and stick my neck out in advance, that when we know these things we will find the aphasic individual does not possess them — that he is an individual who does not have these prerequisite organizations for language function. But I don't know what they are.

I think, therefore, the attempt of defining what is an aphasic as an attempt to eliminate the kinds of individuals and clinical syndromes that are encompassed within this term is of importance not so much because it gives us a word upon which we all agree but because it poses problems for investigation that would otherwise not be as clearly posed.

Dr. Doll: This whole system requires continuing re-evaluations. I would suggest right now that one of the important research problems to be considered is: "What progress do these children make and under what conditions?" That is, what *amounts* of progress do they make and what determines that progress?

Aphasia is hardly an absolute condition. It is almost certainly relative. We, therefore, should recognize degrees of aphasia. The principle that "whatever exists in some amount," and its corollary that amounts can be measured, demands measurement of language aptitude and its degrees of dysfunction.

Sooner or later, we must *quantitatively* assess the progress the child may make under management and treatment. We must have some way of knowing how successful our experiences have been, numerically as well as descriptively.

Miss McGinnis: If this conference follows the general pattern, we will send up big suggestions for further research in this field. I want to close with the suggestion that if this is our closing decision that the research should include an observation of all teaching, therapeutic or management, approaches already in existence, and that the results of each be compared for response. A prognosis should not be tempered by the results of only one approach.

Dr. Cain: Someone asked that they wished the people in education, when they work with these children, would write up reports and communicate back to the people who made the diagnosis.

I think this is a real problem. I think we should have maybe four or five pilot programs throughout the country which would use this interdisciplinary approach to demonstrate effectively how this could be done, so it could be used in concrete fashion to initiate programs in other areas of the country.

I would hope also as an outcome of this conference that this kind of recommendation could be made, and that we could find interested people who would be willing to undertake this. I think by doing this we would get people with more than one pattern. These patterns could be evaluated, and I think we would all be better off if this kind of thing could be done.

Dr. Wood: I think we know a great deal about this subject. We know generally how to evaluate it. At least we already have series of methods to handle it. But we have not as yet breached that important gap between the classroom or clinical setting and the environment where this child must eventually live.

I would like to now see our training methods studied on a research level. I think we have to know what to do next. Where do children go when we finish with them? I do believe this is an educational problem.

Dr. Doll: The social versus the organic influences are important from the standpoint of predisposition versus outcome. And we are concerned with potential versus capitalization. This is why the prognostic problem is important. Unless we can find out what happens as the result of given modes of treatment, we are not going to have a very competent prognosis except in terms of clinical "hunches" or professional "intuition."

Summing Up

Dr. West (General Chairman) and Others

A summation of the problem areas discussed during the Institute, and a list of proposed research projects for which the need was demonstrated during the course of discussions.

Chairman West: I have tried to treat several of the issues that have come before us for discussion. It is obvious that we can't decide the summary in terms of parliamentary procedure. We can't ask to see a show of hands for a vote on a certain issue because no one could really state some of the issues in terms that would be possible for us to vote on.

So, we have to do it this way. Someone has to try to summarize.

I am quite sure that no one can summarize without letting his summary be influenced by his own bias. So, what I am summarizing is influenced by mine. I will do it now rather than at the end of the hour so that you may get into the record your disagreements, if there are any, and I suspect there are. Your disagreements should be in the record, with my summary. That is very important.

I think it is too late, however, for us to enter into arguments on these issues if we haven't convinced each other by this time. There is not time left to do any convincing. I would say that if there is discussion, the discussion should be on the validity of my interpretation and not upon the issues that we have discussed. So, please say whether you think I have been fair in my interpretation; do not argue about the issues that we have discussed; say in what way I have omitted things that should be included in the summary. Those remarks of yours will constitute a part of the summary.

Practically all the participants in this conference, by implication or directly, indicated that they believed that there is a special entity of impairment of the function of language, especially of the learning of language by young children. The commonest name used to designate this entity is aphasia, though several participants included in the term "aphasia" an impairment of all forms of coded communication, particularly reading and writing in addition to speaking and listening.

Most of the participants using the term "aphasia" included only disorders of language as expressed by the larynx, mouth, tongue, and palate, and as perceived by the ear. In short, most like to limit the term "aphasia" to the linguistic impairments of oral and aural communication.

The majority of the participants included a family of chronic disorders or a constellation of symptoms or a syndrome. The group is definitely divided on the matter of the nature of this syndrome.

Some feel that the symptoms of aphasia in children are limited to language as expressed orally and perceived aurally, but some feel proper elements of the syndrome of aphasia are found in items of behaivor quite outside of the behavior of speaking and listening. There was found no real consensus on this matter of the over-all inclusion of the constellation of language impairments in children.

There was a distinct division of opinion also on the matter of relationship between infantile and adult aphasia, some feeling that the two are closely analogous forms and others feeling that the two are only superficially related.

It was generally agreed that aphasia in childhood is a matter of brain deficit innate or acquired, and aphasic children exhibit also the symptoms of other disorders of the brain. Thus, the aphasic may be a multiply handicapped person.

The term "aphasia" is not a specific diagnostic term as is rubella and certain other terms. Aphasia is a medical term; but it is also an educational term, a psychological term, and psychosocial term. Its meaning varies with its context, though there is a core of the meaning that runs through all of the context.

The proof of the efficacy of management or of any special treatment is statistically difficult because the matching of experimental groups is impossible. The matching of normals is one thing but the equating of defective children is impossible because of the idiopathic nature of abnormality.

Some participants recognize the benefit to the child and his family of a program of management from the point of view of morale building, even in the cases in which no linguistic improvement has taken place except that for which God alone is responsible.

The group of participants may be divided upon the basis of their opinions of the relationships between aphasia and schizophrenia. Some felt a definite differential diagnosis between these two entities is usually possible and should always be attempted. Others felt that schizophrenia and aphasia are such close relatives that discrimination between them is not practical or practicable except for superficial description.

Most of the participants applauded the idea that the assigning of the term "aphasia" to a given child does not help as much in the selection of therapy as does a functional description of his linguistic symptoms. The designation aphasia, therefore, is not as useful as a protocol of the patient's linguistic deficits.

Proposals for Research

Now we come to the needs for research, and here I was helped a great deal by the suggestions submitted by members of the conference. These are overlapping, so sometimes one person's suggestions may also be incorporated in somebody else's suggestions. In spite of efforts to eliminate some of the overlapping, I am sure that a great deal of it still remains. The proposed research projects are:

1. Identification of those children with language disorders who can be helped significantly and those who cannot be helped significantly so as to stop spending money on the latter.
2. The role of subcortical organs in language. It was suggested by one person that it would be a good thing to get underneath the cortex for awhile.
3. Further work in cerebral activity in language functions, particularly in children.
4. The nature of the mechanism of the connections between the neural input and neural output.
5. The relation of the two hemispheres, right and left, in the learning of language.
6. Instruments for the measurement of the development of various agents of speech and language in the young child.
7. Sex differences in language development.
8. Tests for the early diagnosis of aphasia.
9. What are the prerequisite factors necessary for the development of language? In other words, what does language readiness depend on?
10. Correlating the common work of the psychiatrist, psychologist, neurologist, and the like, with the knowledge of linguistic scholars.

11. Exploration of the question of the ability to concretize on the part of the aphasic child.
12. The differential use of symbolic versus non-symbolic forms on the part of the aphasic child.
13. The effect of therapy on the development of language in the raising of the speech quotient.
14. The identification of early manifestations or precursors of aphasic children, which involves work in medical and behavioral sciences.
15. A study of parental reports on first referral and parental recall at the time of the poststudy about early developmental items of the child. (We have a pretty good outline for this in the report by Miss Haeussermann.)
16. The relation between the diagnosis and prognosis in specific training and family environment in the aphasic child.
17. a) The psychological social effects of aphasia on the child.
    b) The psychological social effects of the child on the parents.
    c) The relations between the two.
18. The history of pregnancy and delivery in mothers of aphasic children.
19. The study of aphasia in post-mortem analysis of the central nervous system, involving a careful work-up of the ante-mortem linguistic behavior of the patient. (This is very difficult because some of these children do not die of aphasia. It does seem to me it could be a very useful sort of a study if it could be arranged.)
20. Mutism and the role of inhibition on language development.
21. The use of Professor Eugene Sokolof's techniques of the measurement of blood vessel caliber change in the analysis of abnormal language development.
22. The role of language in intellectual development.
23. Spontaneous recovery of oral language disabilities.
24. The modes of language development encountered in mental retardation.
25. Longitudinal study, not necessarily in large numbers, of the young aphasic child when he goes through elementary and high school.
26. The classification of language disturbances and definitions of terms, to be assigned to a closed group of not more than five people, with the request to report to the plenary their suggestions and alternatives. (This seems like a very good thing to hand on to the committee that called us together. In other words, for them to create a committee of five people who could do something with the classification of language disturbances and their definitions.)

Dr. Wepman: I wonder if the research might not well include what relationships there may be between adult aphasia and childhood aphasia. This seemed to be a moot subject in our discussion. Might not that be a subject for research?

Miss McGinnis: I think it is necessary, and I think different types of educational therapy are already in process and you won't have to set up anything new. A team of people could go around the country and evaluate the responses to each particular type of therapy.

Miss De Hirsch: Could we add another item to the research which would be to evaluate why some of our treatment is successful?

Dr. Wepman: I think Dr. Doll mentioned the need for developmental scales and we have heard that some of these are now in preparation. In fact, at the Monday session I presented the beginnings of such a scale myself. We should, however, recognize that scales when too rigidly applied may serve to defeat their own purposes, especially if they are scales of impairment. It might be worth suggesting at this time that more attention might be given to normal language development and to the development of scales for the different types of abilities children need in order to be ready for communication through verbal language, and then to develop impairment scales based upon these normative data.

Dr. Woods: I am wondering about the point of view that was mentioned here several times about the need for some sort of a scale or something of that sort for prognostication.

Dr. Templin: I think the statement regarding the need for profiles should be in the summary.

Dr. Swinyard: I am concurrently looking at some of the brains in the American Academy for Cerebral Palsy Brain Registry and find a great deficiency in many of the protocols. The speech pathologists might say the child is aphasic without additional data. The psychologist may give a mental age or an intelligence quotient without indicating the test instruments used to arrive at that conclusion. When you have that kind of sparse data, it is doubtful if one is justified in making an expensive study of the brain.

It is essential that speech and language and all other data be complete to enable the next person who sees the child to see how you arrived at your conclusion. We never know what the fate of these children will be, and if they should succumb and the brain becomes available for study, the brain is infinitely more valuable if the data are complete. It is virtually useless to simply call the child aphasic without further description.

Dr. Dekaban: Dr. Swinyard's remarks are important, and I would like to mention a few things. Since we are from entirely different disciplines it is quite possible that we are hearing some things here for the first time from authorities representing special groups. We subconsciously tend to take these things for granted, and we know from painful experience in our own specialties that there are few things which can be taken for granted. Pathological examinations of brains of the subjects with congenital aphasia are extremely complex, and I would say, hardly possible at the present state of our knowledge. We are not likely to find any gross lesions which are readily seen in the routine examination or under microscopes. Quite possibly these "lesions" might be within the limits of what we now consider normal variations and yet this might be significant.

Just to give you an example of the problem: to cut serially and to stain one brain into full sized sections takes about three months' work for one person. A comprehensive examination by a neuropathologist with anatomical background would take probably four to six months. Also, at the present time, no satisfactory normal control sections at various ages exist for the purpose of comparison.

Nonetheless, new techniques are forthcoming and they may enable us to estimate cell population without actually counting them. However, no hope should be placed in those instances where the abnormality is not structural but functional since this is beyond the reach of histological methods.

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